COMMELYNACEÆ ET CYRTANDRACEÆ BENGALENSES

(PAUCIS ALIIS EX TERRIS ADJACENTIBUS ADDITIS).

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COMMELYNACEÆ ET CYRTANDRACEÆ BENGALENSES

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BY

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PREFACE.

During the two years I was officiating as Superintendent of the Calcutta Botanic Garden, I meditated publishing some extensive Illustrations of the Bengal Flora. Few of the species have hitherto been depicted and these few plates are scattered in many books. When I was relieved from the charge of the Calcutta Botanic Garden in June 1871, the complete set of drawings representing every Bengal species of the small orders Commelynaceæ and Cyrtandraceæ was nearly ready. I now publish them as a fragment. The lithographic plates have been prepared while I have been travelling in East Bengal in a boat. This has only been rendered possible by the kindness and botanic ability of my friend Mr. H. H. Locke who has managed the lithography entirely for me in Calcutta. The letter-press has been finally revised by me away from the Calcutta Herbarium and without the advantage of comparing the specimens there and of consulting the Library and is not quite what I intended it should have been. The original drawings of the plants were made partly by the artists paid by Government at the Botanic Garden and are therefore Government property. I have to thank Dr. George King, the Superintendent of the Calcutta Botanic Garden, for his liberality and kindness in permitting me the fullest use of them.

The present monographs were designed to be useful to persons who have not the opportunity of referring to a large Botanical Library, and to be complete in themselves so far as the Bengal plants are concerned. I have therefore often copied (with acknowledgment) plates of plants of these orders already published, but scattered through various large botanical works. But in such cases I have compared very carefully the plate copied with the plant, and have often made additions or corrections to the plate as in Œschynanthus Peelii, Tab. XLIV. I have generally made use of published plates in this way because I thus have obtained a better representation of the plant than my Calcutta artist could make. But where the plate already published shews an unusual state of the species, I have preferred to put out a new picture, artistically inferior : as in Chirita macrophylla Tab. LXXI.

The drawings have where possible been made from living plants but are mostly taken from herbarium specimens. In such cases in general I have been able to supervise the drawing by the light of my own acquaintance with the living plant. Though the result is not quite satisfactory, the question practically lies between such pictures or none. The Cyrtandraceæ of the damp valleys of Sikkim cannot be cultivated at Calcutta, and there are great difficulties in inducing a Bengali artist to visit their native habitat.

It will be seen that the drawings for these plates were not made by men of much artistic power, though Mr. Locke has corrected the grosser errors in the process of lithographing them. But they are made by men who measure every leaf and peduncle with a pair of compasses, and they are as to the prominent characters most faithful. The artists knowing nothing of botany have often made errors in the minuter but essential botanic points, and these are mentioned (I hope always) in the text describing the plate. It will be understood that when the text and the plate do not well agree, the text is always the superior authority. The dissections and magnified drawings are generally my own work, and are I trust tolerably correct, but I am totally uninstructed in drawing.

The monographs are intended to include every species and marked variety of plants in the two orders Commelynaceæ and Cyrtandraceæ growing wild in Bengal. A large proportion of these are known to me wild. But there are materials in the Calcutta Herbarium sufficient to prove that there remain several more distinct species to be added hereafter. I have taken up species from dried specimens only where the material is full and satisfactory, and have thought it better to pass by species than to put them out with imperfect characters. There are added one or two new species from Burmah and South India.

I hope that few of the new species described will ever be reduced to varieties; but I have admitted several species, which I would rather class as varieties, out of deference to Wallich, Hasskarl, and others.

The distribution of the several plants in Bengal and in India is given so far *only* as specimens actually in my hands demonstrate it; the range of many of the species is doubtless much wider than the limits which I have been able to indicate.

The allegations are generally stated absolutely; this is done for the sake of brevity: and with each must be understood the qualification "in my "opinion, and so far as I have as yet seen."

COMMELYNACEÆ.

LIST OF THE PLATES.

I. COMMELYNA communis.
II. C. salicifolia.
III. C. Hasskarlii.
IV. C. bengalensis.
V. C. clavata.
VI. C. sikkimensis.
VII. C. rajmahlensis.
VIII. C. Kurzii.
IX. C. obliqua α genuina.
X. C. „ β viscida.
XI. C. „ δ Mathewii.
XII. C. suffruticosa.
XIII. C. appendiculata.
XIV. ANILEMA scapiflorum.
XV. A. lineolatum.
XVI. A. divergens.
XVII. A. Hookeri.
XVIII. A. nanum.
XIX. A. triquetrum.
XX. A. spectabile.
XXI. A. nudiflorum.
XXII. A. ensifolium.
XXIII. A. vaginatum.
XXIV. A. protensum.
XXV. A. ovatum.
XXVI. AMELINA Wallichii.
XXVII. DICHÆSPERMUM Blumei.
XXVIII. D. repens.
XXIX. ACLISIA indica.
XXX. A. subumbellata.
XXXI. A. Thomsoni.
XXXII. POLLIA Aclisia.
XXXIII. P. thyrsiflora.
XXXIV. DITHYROCARPUS paniculatus.
XXXV. CYANOTIS axillaris.
XXXVI. C. cristata.
XXXVII. C. barbata.
XXXVIII. C. racemosa.
XXXIX. C. nobilis.
XL. STREPTOLIRION volubile.
XLI. FORRESTIA Hookeri.
XLII. F. glabrata.

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COMMELYNACEÆ.

Dr. Hasskarl's Monograph entitled "Commelynaceæ Indicæ imprimis Archipelagi Indici" is dated 1870. My paper "On "the Commelynaceæ of Bengal" was read at the Linnæan Society of London on 17th February 1870, and was subsequently printed in the Linnæan Society's Journal, Botany, Vol. XI. It was written quite independently of Dr. Hasskarl's far more elaborate work.

I have since discovered several new species of Commelynaceæ in Bengal, and have with larger material worked over the Bengal species again by the light of Dr. Hasskarl's labors. I now publish the result as a corrected and slightly extended edition of my paper read before the Linnæan Society. The most important correction, *viz.* the disentanglement of the two genera Pollia and Aclisia, I arrived at by alighting on the two plants called below (in accordance with Dr. Hasskarl's nomenclature) Aclisia Indica and Pollia Aclisia growing together; but Dr. Hasskarl is entitled to the entire credit of unravelling the confusion which previously existed concerning these genera.

I have had three dried collections to work with, *viz.*, my own, the Calcutta Herbarium Collection, and the private collection of Mr. Kurz, the Curator of the Calcutta Herbarium, which contains many Java specimens, some collected in Java by himself, others issued named from the Buitenzorg Herbarium.

The books I have been able to consult are:

(1.) Roxburgh's Flora Indica, Carey's Edition.
(2.) Roxburgh's Original Drawings preserved in the Calcutta Herbarium.
(3.) Wight's Icones Plantarum, Vol. VI.
(4.) Kunth's Enumeratio, Vol. IV.
(5.) Hasskarl in Plantæ Junghuhnianæ, published 1852.
(6.) Miquel's Flora Bataviæ, Vol. III.
(7.) Hasskarl on Forrestia, in Regensburg Flora, No. 40, 1864.
(8.) Hasskarl, Genera Commelynacearum, in Regensburg Flora, No. 14, 1864.
(9.) Hasskarl, Commelynaceæ Indicæ, 1870.
(10.) Dalzell, in Hooker's Journal of Botany, Vol. III., 1851.
(11.) Thwaites' Enumeratio Plantarum Zeylaniæ.
(12.) Bentham's Flora of Hong-Kong.
(13.) Edgeworth, in Linnæan Society's Transactions, Vol. XX.
(14.) Drury's Hand-book of the Indian Flora, Vol. III., 1869.

I have reduced my work (as formerly in my paper in the Linnæan Journal, Vol. XI., page 438) to the standard of Kunth's Enumeratio. It will be seen that I could not well have accepted Dr. Hasskarl's numerous new genera corresponding to the old Commelyna and Anilema: among other reasons because it would have necessitated my inventing another batch of new genera. The one new genus, which I have invented a name for, has been indicated long ago as necessary.

I have withdrawn several of the reductions of South Indian species (especially of Cyanotis) proposed in my above-quoted paper; not that I am satisfied they are wrong, but I am become very doubtful regarding my herbarium reductions of species which were founded by Wight and others *after long observation of them in the field.* I have (since February 1870) paid a short visit to the Nilgiris and seen many of the species alive myself: and I still incline to the views propounded in my paper of February 1870 regarding them; but I prefer not to reprint any opinion at present on these very difficult species.

There is not much difference of opinion regarding the position and affinities of the order Commelynaceæ: they may be defined artificially as those lilies which have an embryo transverse to the axis (instead of in the axis) of the seed. In those Commelynads which have seeds (or some of them) with a definite axis of figure (as Tab. II. figure 6, Tab. VII. figure 7, Tab. XXXIV. figure 3) it is easy to see by making a plane section perpendicular to the axis that the embryo lies in that plane with the growing point remote from the hilum or more strictly remote from that point of the hilar line in which the plane section cuts it. The growing point is usually not opposite the hilum but unsymmetrically turned away from it. When we come however to those genera which have small and altogether unsymmetrical seeds (*vide* Tab. XXIX. figures 3, 4; Tab. XXXII. figures 3, 4) it is only by indirect reasoning and comparison with the seeds of the more typical genera that we can judge where the axis of the seed is. All we can say is, draw a line from the hilum of the seed to the opposite side of the seed and the growing point will be found out of that line and in a plane transverse to it.

The artificial definition in such cases becomes difficult to work. There are a number of other more easily-seen characters which separate the typical Commelynaceæ from Liliaceæ but each one of these fails at some point or other.

Thus Commelynaceæ usually differ by the numerous joints of their stems and the quasi-petiolate leaves: but in Anilema scapiflorum and other species these characters are not seen. The seeds are usually very numerous in Liliaceæ few in Commelynaceæ, but this distinction fades away when we come to Dichœspermum which exhibits sometimes 50 seeds to a capsule. In the typical Commelyneæ the flowers are more or less unsymmetrical in stamens petals and ovary, but in the genera Cyanotis, Pollia, Streptolirion, are perfectly symmetrical. Forrestia is symmetrical except that it shews in the capsule a strong tendency to the want of symmetry typical of Commelyna itself, and has been formerly referred to Liliaceæ. But, of these symmetrical or nearly symmetrical genera, Cyanotis Streptolirion and Forrestia have few seeds and those distinctly shewing the growing point transverse to the axis: while Pollia is so closely allied to Aclisia that it clearly stands next it. Moreover, it can be demonstrated as regards the seeds of Pollia, in spite of their want of symmetry, that the growing point cannot be in the axis of the seed. There remains in short no doubt, regarding any of the ten genera below described, that they ought to be included in Commelynaceæ.

GENERA ET SPECIES COMMELYNACEARUM INFRA DESCRIPTÆ.

* Stamina non 6 perfecta subsimilia.

I. COMMELYNA. Pedunculi ex spatha enati.

1. Commelyna communis.
2. C. salicifolia.
3. C. Hasskarlii.
4. C. bengalensis.
5. C. clavata.
6. C. sikkimensis.
7. C. rajmahlensis.
8. C. Kurzii.
9. C. obliqua.
10. C. suffruticosa.
11. C. appendiculata.

II. ANILEMA. Pedunculi haud ex spatha enati (A. spectabili excepto). Capsula regulariter 3-valvis. Semina in quoque loculo 1-seriata.

1. Anilema scapiflorum.
2. A. lineolatum.
3. A. divergens.
4. A. Hookeri.
5. A. nanum.
6. A. triquetrum.
7. A. spectabile.
8. A. nudiflorum.
9. A. ensifolium.
10. A. vaginatum.
11. A. protensum.
12. A. ovatum.

III. AMELINA. Pedunculi haud ex spatha enati. Capsula regulariter 2-valvis. Semina in quoque loculo 1-seriata.

1. Amelina Wallichii.

IV. DICHÆSPERMUM. Capsula regulariter 3-valvis. Semina in quoque loculo 2-seriata.

1. Dichœspermum Blumei.
2. D. repens.

V. ACLISIA. Capsula indehiscens aut irregulariter rupta.

1. Aclisia indica.
2. A. subumbellata.
3. A. Thomsoni.

* * Stamina 6 perfecta subsimilia.

VI. POLLIA. Capsula indehiscens aut irregulariter rupta.

1. Pollia Aclisia.
2. P. thyrsiflora.

VII. DITHYROCARPUS. Capsula bivalvis disperma. Panicula terminalis.

1. Dithyrocarpus paniculatus.

VIII. CYANOTIS. Capsula trilocularis, regulariter trivalvis. Flores axillares aut scorpioideo-racemosi.

1. Cyanotis axillaris.
2. C. cristata
3. C. barbata.
4. C. racemosa.
5. C. nobilis.

IX. STREPTOLIRION. Capsula trilocularis, regulariter trivalvis. Panicula terminalis. Late volubilis.

1. Streptolirion volubile.

X. FORRESTIA. Panicula dense conferta axillaris, pedunculo folii vaginam perforante.

1. Forrestia Hookeri.
2. F. glabrata.

I.—COMMELYNA. Kunth Enum. IV., p. 35 (Char. emend.)

Stamina 3 antica perfecta (quorum intermedium dissimile) 3 vel 2 sterilia difformia. Capsula 3-aut 2-locularis ; 5-4-3-aut 2-ovulata. Pedunculi 2, (quorum unus haud raro rudimentarius vel obsoletus) ex spatha complicata aut cucullata orti eaque subinclusi.

Sect 1.—Capsularum loculi duo 2-ovulati : loculus tertius 1-ovulatus vel 0. Semina normaliter 5 vel 4.

a. Eu-commelyna (= Commelyna genus Hasskarlii) Loculus tertius evolutus.

b. Dissecocarpus (genus Hasskarlii) Loculus tertius deficiens.

Sect 2.—Capsularum loculi 3 aut 2 omnes 1-ovulati. Semina 3 aut 2. (= genera Trithyrocarpus et Spathodithyros Hasskarlii.

Dr. Hasskarl's Monograph of the Commelynaceæ of Malaya and my paper on the Commelynaceæ of Bengal were prepared independently ; and it is satisfactory that we have both been led to establish our main distinctions on the capsules and seeds. Our work differs widely at first sight, because I have made sections where Dr. Hasskarl has made genera : indeed, some of his genera appear to me untenable even as sectional divisions.

In my paper I formerly based my main sub-divisions of the genus Commelyna (mihi) upon the dehiscence of the capsule. In many species one cell is very constantly indehiscent and withers so closely on the seed that it is with difficulty removed therefrom by scraping with a knife ; the other two cells being early dehiscent. Vid. Tab. I. figure 4., Tab. IV. figures 4, 5. In other species all the cells of the capsule dehisce. Vid. Tab. IX. figures 3, 10. But this distinction I find is not absolute. In Commelyna communis for instance one seed is nearly always retained in a closed cell, but I have found plants grown in very wet places in the hills where the closed cell dehisces by as clean-cut a loculicidal line as the other cells, but much later. Hence I have abandoned the differences in dehiscence as the main ground of sub-division of the genus.

The number of cells in the capsule is not constant in some species. In Commelyna appendiculata the third small closed cell is usually present but sometimes quite obsolete, so that both 3-and 2-celled capsules are found on the same plant. Vid. Tab. XIII. figures 1, 2, 3, 4, 8, 9, 10. In Commelyna obliqua the cells are generally 3 sometimes 2 ; and I find both 2-and 3-celled capsules on the same plant. Vid. Tab. IX. figures 1, 2, 3, 8, 9, 10. In Commelyna salicifolia I have found in some Assam specimens 2-and 3-celled capsules on the same plant. The genera Trithyrocarpus and Spathodithyros of Hasskarl on these facts can hardly be maintained.

The number of barren aborted stamens is in my experience always 3 or 2 in Commelyna, but I should be sorry to found a new genus on a Commelyna because it exhibited less than 2 barren stamens. Spathodithyros is defined by Hasskarl (in his Commelynaceæ, p. 10) as having no sterile stamens ; but the single plant of the genus, Commelyna suffruticosa, is described by Hasskarl (in Plantæ Junghuhnianæ, p. 141) as having " stamina generis." I find 3 barren stamens.

Heterocarpus, Wight, has not been found in Bengal. I hazarded a suspicion (in my paper on the Commelynaceæ of Bengal) that my Commelyna rajmahlensis was Heterocarpus glaber of Wight : two of the seeds early disperse together with the capsule valve, and there remains one seed permanently held in the single loculus that withers upon it.

As to Heterocarpus obliquus (Hasskarl Commelynaceæ, p. 7,) the author must have had very imperfect specimens to have so placed it, as it is the type of his genus Trithyrocarpus. I consider Heterocarpus ? obliquus Hassk. and Trithyrocarpus paleatus Hassk. to be one and the same plant. My Javan specimens however are not authenticated by Dr. Hasskarl himself, but issued named from the Buitenzorg Herbarium. It only requires in my opinion to read Dr. Hasskarl's exposition of Heterocarpus Wight (in his Commelynaceæ, p. 6,) to be satisfied that the genus is bad.

In Commelyna, so far as I know, those species in which some of the cells of the ovary contain two ovules never vary so that all the cells of the ovary contain one ovule only : that is to say my two main sections now proposed of the old genus Commelyna are strictly definite. Nevertheless, after considering the variations which occur in Forrestia Hookeri and Cyanotis nobilis, I could not feel altogether surprised should my Commelyna sikkimensis turn out a variety propagatable from Commelyna communis. Should however this be found to be the case, I fear all the new genera carved by Dr. Hasskarl out of the old Commelyna will be swept away as well as my sectional divisions.

The markings on the seeds of Commelyna are very trustworthy. The arrangement of the spathes (*i. e.* scattered axillary or crowded towards the end of the branches) is also very characteristic in some species.

As to the shape of the spathes, it varies enormously on individual plants, sometimes even more widely than is shewn in my picture of Commelyna communis, Tab. I.

The peduncles are normally two in each spathe, whereof the lower comes into flower first : this lower peduncle rarely carries more than two flowers, the upper peduncle carries from two to twenty, according to the species. Each flower is pedicellate and all the pedicels are articulated on the peduncle : such flowers as are barren or wholly male usually drop early by the disarticulation of the pedicel : where seeds are perfected, the disarticulation never takes place. The lowermost *i. e.* first-flowering flower of the upper pedicel is always perfect, and on this upper pedicel there may be in some species 1 to 6 flowers producing capsules, the tendency of each successive higher flower being more and more to become male. In the lower peduncle the flowers are rarely both perfect ; in some species not infrequently one is per-

fect : but the common case is that this lower peduncle carries only one or two male flowers, and the pedicels disarticulate off before the upper peduncle blooms. In some plants, in some of the spathes there are pedicels on the lower peduncle which drop early, in other of the spathes the pedicels are aborted altogether. We next come to species as C. suffruticosa, in which the lower pedicels are always wanting, and in this the rudimentary lower peduncle is often itself nearly aborted. From these observations I have been led to attach small importance to the distinction between one peduncle to the spathe and two peduncles to the spathe hitherto much relied on in the specific characters.

The form of the stamens in Commelyna is shewn in Tab. XII. figure 3 : and also in Tab. IX. (by Roxburgh's artist). The cruciform top to the barren filaments is yellow and without any trace of pollen. In most of the species the central deformed perfect stamen has yellow anthers, and the two lateral perfect stamens have blue anthers. Though the anthers are thus unlike in form and color, the pollen therefrom is exactly alike, ellipsoidal yellow, nearly smooth. In C. suffruticosa, the perfect anthers are dissimilar in form, but all of them yellow in color. In Commelyna, in all the species, the anthers are white till a very late period of their development, and only gain their different colors just before expansion. Another specific character has been taken from the degree of inequality in the size of the petals. In my paper on Commelynaceæ above referred to, I divided out the species mainly by characters taken from the capsule and seeds. Dr. Hasskarl has been led to sub-divide the genus on the same principles. It has been objected to me, by the highest authority, that in the Commelyna communis bundle of the Kew Herbarium, the capsules are as often 4-and 3-seeded as 5-seeded. This would be the case if Commelyna clavata and Commelyna sikkimensis are admixed, as they assuredly would be if the bundle has only been hand-and-eye sorted and never worked. It is possible, indeed, that hereafter Commelyna sikkimensis and C. clavata may finally be reduced to varieties of C. communis. I can only reply that I have examined now a very large number of specimens of Commelyna, and that I feel confident no better characters for limiting the species than the capsules and seeds will soon be found.

The capsule of Commelyna communis contains three cells : the two larger cells contain each two superimposed seeds and dehisce : the third cell is placed lower down on the axis of the capsule and contains one larger and differently shaped seed, and is indehiscent or very rarely dehisces very late. Vid Tab. I. figures 1, 2, 3, 4, 5, 6, 7, 8. Commelyna salicifolia, Tab. II. and Commelyna bengalensis, Tab. IV. exhibit the same arrangement of capsule and seeds. In Tab IV. figure 4 (copied from Wight) the capsule is seen dehiscing, the four seeds are shewn ready to drop in one valve, and the other valve has one seed in the indehiscent cell. The two superimposed seeds in one of the larger cells fit close together, and when so fitted resemble much the seed in the solitary cell and are a little larger than it.

The capsule of Commelyna sikkimensis Tab. VI. is the same in structure and dehiscence : but each of the larger dehiscing cells contains one seed only. The capsule is here three seeded, the seeds being similar in form, but that in the closed cell being the smallest.

The capsule of Commelyna appendiculata Tab. XIII. and the seeds are generally arranged as in C. sikkimensis, but the third unequal smaller cell is reduced : and on the same plant are often seen cases where it is entirely obsolete, and the capsule comes out regular 2-celled, as in Tab. XIII. figures 8, 9, 10.

The capsule of Commelyna obliqua, figure 9, is seen regularly 3-celled, 3-loculicidally dehiscent with one seed in each cell ; all the seeds being similar : or on the same plant it may be found regularly 2-celled, exactly as in the reduced form of capsule of Commelyna appendiculata. Finally, Commelyna suffruticosa always has the capsule equally 2-celled loculicidally 2-valved with one seed in each cell.

Miquel relates of Commelyna bengalensis (?) as found in Java that the capsule contains three cells and two seeds in each cell. If this plant is rightly described, it will be a new genus for Dr. Hasskarl, and certainly cannot be Commelyna bengalensis, Roxb. or any species of Commelyna known to me.

The seeds of Commelyna are attached by a linear hilum ; Vid Tab. I. figures 7, 8. When the ovule in the cell is solitary, the growing point is at the middle of the seed. Vid Tab. I. figure 6. But when there are two ovules in a cell, each seed has its growing point near the end. Vid Tab. I. figure 5.

Species infra descriptæ.

Sect I. a. Eucommelyna.

1. Commelyna communis.
2. C. salicifolia.
3. C. Hasskarlii.
4. C. bengalensis

b. Dissecocarpus.

5. C. clavata.

Sect II.

6. C. rajmahlensis.
7. C. sikkimensis.
8. C. Kurzii.
9. C. obliqua.
10. C. suffruticosa.
11. C. appendiculata.

1

2

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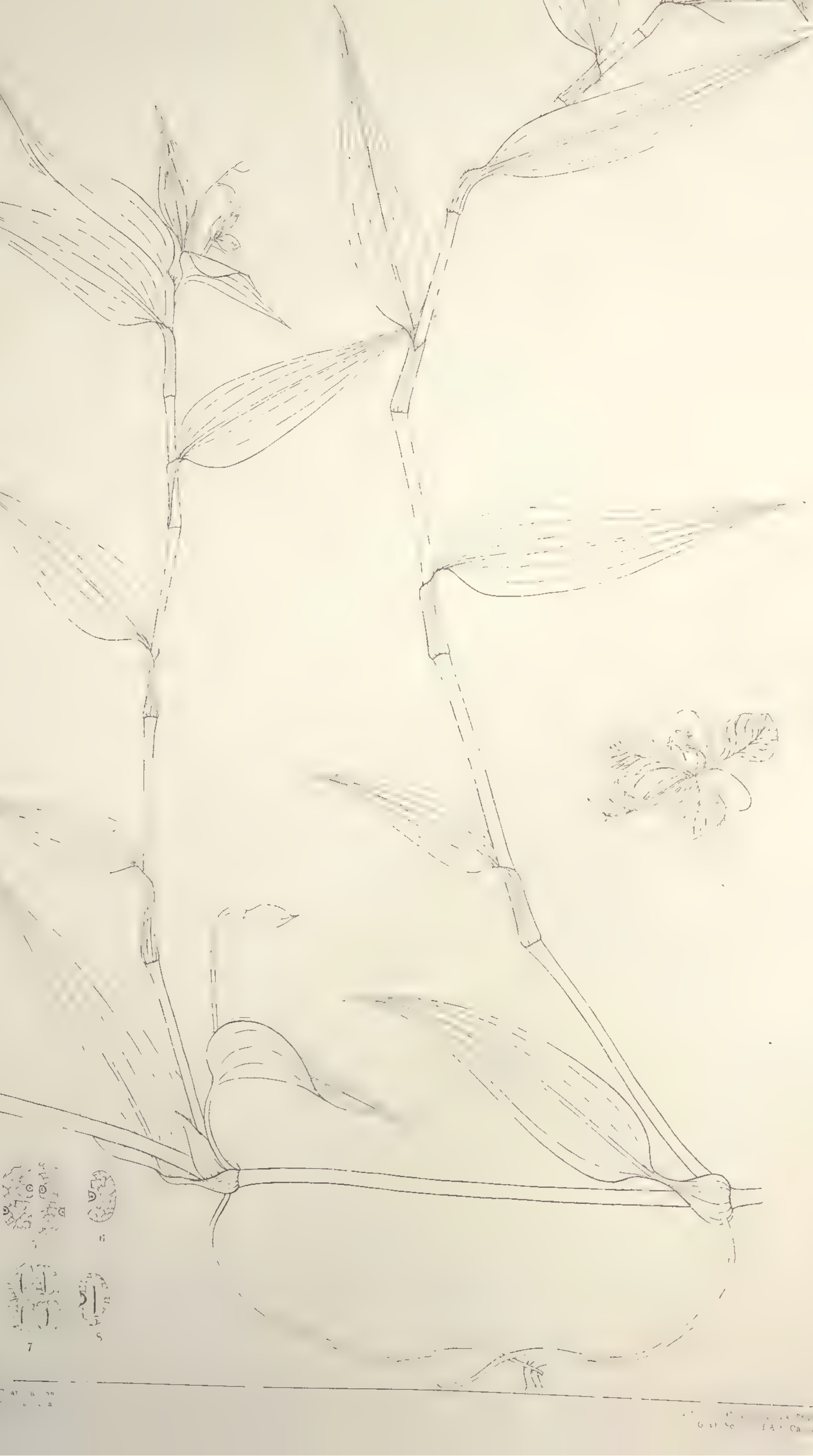

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TAB. I.

COMMELYNA COMMUNIS.

1. Commelyna communis Kunth, Enum. IV. p. 36, Miq. Flor. Ind. III. p 531 syn excl ? C. agraria Kunth, Enum. IV. p. 38. Hassk. Commelynaceæ, p. 26. Webb and Berthelot, Iles Canaries, t. 238. C. africana Kunth, Enum. IV. p. 40. C. cæspitosa Roxb. Flor. Ind. I. p. 174, et tab. 1307 in Calcutta Herbario. C. diffusa Kunth, Enum. IV. p. 43.

Folia subglabra oblonga acuta. Spathæ complicatæ, basi cordatæ, acutæ sparsæ. Semina 5 reticulata.

Hab. In Bengalia ubique.

Distributio Indica. In Burma et Malaya.

Caulis cum vel absque linea pilosa. Folia vaginæque glabræ puberulæ vel breviter pilosæ. Vaginarum ora subglabra ciliata aut rufo-ciliata. Pedunculus inferior unum, aliquando nullum, rarius duos flores gerens. Pedunculus superior 2-4 vel etiam 6 flores gerens. Pedunculi superioris flos infimus (aliquando duo flores inferiores) perfectus, cæteri masculi. Pedunculus inferior sæpius flores masculos gerit : rarius 1, rarissime 2, flores perfectos gerit. Spatha plus minus elongata in eadem planta sat variabilis. Fructûs duorum loculorum semina sparguntur ; loculus tertius marcescens semen arcte amplectitur : sed perraro hunc tertium loculum maturius (longe post aliorum duorum loculorun dehiscentiam) regulariter dehiscentem vidi.

Vidi specimina viva spontanea numerosissima.

The specimens of C. agraria and C. africana from Africa do not differ in any particular from specimens of C. communis growing in Bengal. The only question is whether the name C. communis or C. agraria should be retained for this wide-spread species.

The Commelyna communis of Roxburgh is certainly (vid infra) the modern C. obliqua ; and I judge from his figure of C. cæspitosa in the Calcutta Herbarium that Roxburgh so named our C. communis. Bentham (in Hongkong Flora., p. 376) reduces C. cæspitosa, Roxb. to C. salicifolia Roxb., with a query. It is not C. salicifolia at all events. Commelyna communis Benth., Hongkong Flora, p. 376, is probably the same plant sent from China to the Calcutta Herbarium by Dr. Maingay : it is very near C. communis, but differs by the venose, shortly acute, spathes ; by the inflorescence, which is collected towards the ends of the branches ; and in the seeds which are grossly punctate, but scarcely reticulated.

From the description I judge C. subamplectens Hassk., Commelynaceæ, p. 27, to be C. communis, mihi : but in the absence of any description of the seeds it may possibly be C. salicifolia.

Commelyna linearifolia Kunth, Enum. IV. p. 43 I judge from the description to be = C. communis : the suppression of the lower peduncle is not uncommon. The leaves in some specimens of Commelyna communis are quite as narrow as in C. salicifolia.

EXPLICATIO TABULÆ I.

Planta ex specimine recente nuper depicta.

Flos unicus auctus e Webb et Berthelot, Iles Canaries, t. 238, fig. 3, (Commelyna agraria) exscriptus.

1. Capsula matura a latere visa, in pedicello resupinata.
2. Capsula matura a dorso visa.
3. Capsula matura a facie visa.
4. Capsulæ dehiscentis horizontalis sectio.
5. Quatuor semina in situ ab externa facie visa, loculi altera valvula per maturationem dehiscente.
6. Quintum semen e loculo indehiscente extractum ab externa facie visum.
7. Quatuor semina in 5. ab interna facie visa.
8. Quintum semen in 6. ab interna facie visum.

TAB. II.

COMMELYNA SALICIFOLIA.

2. Commelyna salicifolia. Kunth Enum. IV. p. 39. Roxb. Flor. Ind. I. p. 172, et t. 1020 in Calcutta Herbario. Hassk. Commelynaceæ, p. 27. Miquel Flor. Ind. III. p. 532, quoad descript.

Folia subglabra anguste oblonga. Spathæ complicatæ, basi cordatæ, longe acuminatæ. Semina 5 (perraro 4 loculo tertio obsoleto) lævia.

Hab. In Bengalia ubique.

Distributio Indica. In planitie Gangetica superiore. In Peninsula Indica. In Burma.

Pedunculus inferior 1 vel 2 masculos flores habet. Pedunculus superior 3-5 flores gerit quorum duo saltem inferiores perfecti : idcirco in quaque spatha duæ capsulæ sæpius videntur. Semina 4, utrinque minima appendicula munita, sparguntur ; semen quintum in loculo indehiscente hærit. Semina matura obscure et minutissime flocculosa.

Vidi specimina viva spontanea numerosissima.

This species among grass or bushes becomes subscandent, and throws out little-branched succulent stems which run 6 feet or more. It varies from this large type to the small form called β angustata by Hasskarl, Commelynaceæ, p. 27, with scattered spathes.

Bentham in Hongkong Flora, p. 376 and Thwaites in Ceylon Enumeration, p. 321, lay stress on the shape of the odd petal in this species in separating it from C. communis. I believe the distinction which I have taken in the smoothness (*i. e.* non-reticulation) of the seeds to be infallible.

Commelyna communis has sometimes narrow leaves and elongated spathes, and then in the absence of ripe seeds I cannot distinguish it from the small forms of C. salicifolia. No. 23 ex herb Hk. f. et Th. and No. 28 ex herb Hk. f. et Th. both issued from Kew under the name of C. salicifolia are both C. communis, for these specimens exhibit ripe seeds.

The Ceylon prodromus No. 2979 referred by Thwaites to C. salicifolia Roxb. cannot be the plant judging by the specimen issued by Thwaites to the Calcutta Herbarium : but this specimen is not in fruit so that I cannot say what it is.

In some specimens of C. salicifolia sent down from Assam, (and in some collected by me in Chota Nagpore), some of the capsules have the third cell obsolete and therefore only 4 seeds : but there are other normal 5-seeded capsules on the same specimens.

Commelyna salicifolia β monosperma described in my paper in Linnæan Journal, Vol. XI. p. 443, is Commelyna appendiculata infra.

EXPLICATIO TABULÆ. II.

Planta e tabula 1020 Roxburghii exscripta.

Spatha dimidiata cum floribus e tabula 1020 Roxburghii exscripta.

1. Capsula matura a latere visa in pedicello resupinata.
2. Capsula matura a tergo visa.
3. Capsula matura a facie visa.
4. Capsulæ dehiscentis horizontalis sectio.
5. Capsulæ valvula vacua amota est : quatuor semina duorum majorum loculorum in situ videntur.
6. Quintum semen e loculo clauso excisum ab externa facie visum.
7. Seminis in fig. 6. horizontalis sectio.
8. Quatuor semina in fig. 5. a facie interiore visa.
9. Quintum semen in fig. 6. a facie interiore visum : hilum lineare videtur.

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Litd by Bejar Nath Das, S ..ant,
G v Scho .. of A .. Calcutta

TAB. III.

COMMELYNA HASSKARLII.

3. Commelyna Hasskarlii nov. sp.

Folia subglabra oblonga acuta. Spathæ complicatæ, basi cordatæ acutæ, sparsæ. Semina 5 lævia.

Hab. In collibus Rajmahl ad 500 ped. alt. In Chota Nagpore ad 1,000-2,000 ped. alt.

Forsan Commelynæ salicifoliæ varietas. Differt foliis latioribus, spathis minus acuminatis, seminibus minoribus omnino exappendiculatis.

Vidi specimina viva spontanea numerosa.

(Species a Sulp. Kurz primum collecta.)

EXPLICATIO TABULÆ III.

Planta ex specimine Rajmahlensi exsiccato depicta.

1. Capsula matura a latere visa in pedicello resupinata.
2. Capsula matura a tergo visa.
3. Capsula matura a facie visa.
4. Capsulæ dehiscentis horizontalis sectio.
5. Capsulæ dehiscentis valvula vacua amota est : semina quatuor duorum loculorum majorum in situ videntur,
6. Quintum semen e loculo clauso excisum ab externa facie visum.
7. Quatuor semina in fig. 5 ab interna facie visa.
8. Quintum semen in fig. 6 ab interna facie visum.

TAB. IV.

COMMELYNA BENGALENSIS.

4. Commelyna bengalensis, Kunth Enum. IV. p. 50. Roxb. Flor. Ind. I. p. 171 et t. 1019 in Calcutta Herbarium. Wight Icones, t. 2065. Hasskarl Commelynaceæ, p. 28. Benth. Hongkong Flora, p. 376. Miquel Flor. Ind. III. p. 533, error. exceptis. (?)

Folia pilosa ovato-elliptica. Spathæ cucullatæ, turbinatæ sparsæ. Semina 5 rugoso-punctata.

Hab. In Bengalia ubique.

Distributio indica. In planitie Gangetica superiore. In Peninsula Indica. In Burma, Malaya, China.

Pedunculus inferior vulgo unicum masculum florem gerit, aliquando rudimentarius, rarius omnino obsoletus evadit. Pedunculus superior sæpissime duos perfectos flores habet : idcirco in quaque spatha, duæ capsulæ videntur. Capsulæ duo loculi quatuor semina spargunt tertius loculus indehiscens marcescens semen amplectitur.

Vidi specimina viva spontanea numerossissima.

Out of eight (and three more dubious) species of Commelyna given by Miquel in Flora Bataviæ III. p. 531, only in this species does he describe the capsule and seeds : and he states of C. bengalensis " Capsula 3-locularis, loculo uno minore, omnibus di-" spermis." I have never seen a specimen of C. bengalensis (nor of any other species of Commelyna) which exhibits a 6-seeded capsule.

Commelyna oblongifolia Hasskarl Commelynaceæ, p. 27. I judge from the description to be a variety of C. bengalensis : it is said to differ " foliis longius petiolatis, plerumque oblongis, basi sæpe subcordatis, pedicello solitario et aliis forsan signis," *i. e.* meo sensu, it does not differ at all.

[Commelyna cælestis, *i. e.* according to Asa Gray Commelyna erecta Linn., cultivated at Darjeeling has spread much from gardens at an altitude of 7,000 to 8,000 feet, and looks as if it could maintain itself.]

EXPLICATIO TABULÆ IV.

Planta ex tabula 103 Roxburghii exscripta.

Spatha dimidiata cum floribus ex tabula 103 Roxburghii exscripta.

1. Capsula matura a latere visa in pedicello resupinata.

2. Capsula a facie visa.

3. Capsula a tergo visa.

1. Capsula dehiscens a Wight exscripta. Quatuor semina in valvula altera adhæsa videntur : valvulæ alteræ in tergo affixus loculus clausus monospermus videtur.

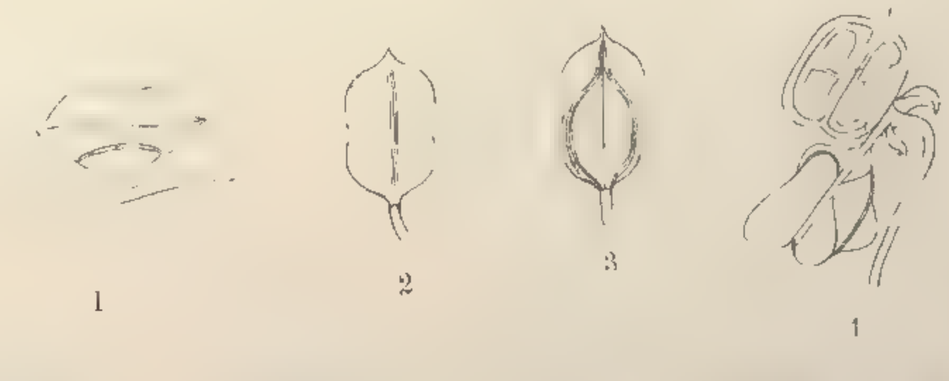
5. Capsulæ dehiscentis horizontalis sectio.

6. Quatuor semina duorum majorum loculorum ab externa facie visa.

7. Quintum semen e loculo clauso exc'sum ab externa facie visum.

8. Quatuor semina in fig. 6, ab interna facie visa.

9. Quintum semen in fig. 7, ab interna facie visum.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Drawn by S[illegible] Das
Botanic Garden[illegible]

Lithd by Udaya Chand Samanta, Student,
Govt School of Art, Calcutta.

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Drawn by Gopal Chandra Das
Board of Examiners, Calcutta

Litho by Tara Das Pal, Student
Govt School of Art, Calcutta

TAB. V.

COMMELYNA CLAVATA.

5. **Commelyna clavata, nov. sp.**

Folia subglabra anguste lanceolata. Spathæ complicatæ, basi cordatæ, acuminatæ sparsæ. Semina 4 aut 2 rugoso-reticulata.

Hab. In montibus Nilghiri Peninsulæ Indicæ ad 3,000-7,000 ped. alt.

Pedunculus inferior vulgo duos masculos flores gerit. Pedunculus superior 4-5 flores gerit quorum 2-3 saltem inferiores perfecti. Ovula 4, bina in duobus loculis superimposita. Semina 4, sed sæpe ovula 2 inferiora abortiva ideoque capsula basi angustata disperma quasi-clavata evadit.

Vidi specimina viva spontanea numerosa.

This may be merely a variety of Commelyna communis, with the third closed cell aborted as described in Commelyna salicifolia and below in Commelyna appendiculata and C. Kurzii. I have however never seen C. communis exhibit 5- and 4-seeded capsules on the same plant : and the frequent abortion of the lower ovules in C. clavata I have never known to occur in C. communis. Moreover it is not usual for C. communis to perfect two capsules in one spathe.

Commelyna polygama differs much at first sight by its broader leaves and stronger growth : the spathes too are more approximated towards the end of the branches. But the ovary capsule and seeds of C. polygama are so closely like those of C. clavata that I have doubts whether the latter is well separated.

EXPLICATIO TABULÆ V.

Planta ex specimine Nilagirico exsiccato depicta.

1. Capsula normalis, a facie aut a tergo visa, semina quatuor gerens.
2. Capsula normalis a latere visa, in pedicello resupinata.
3. Capsulæ dehiscentis horizontalis sectio.
4. Semina quatuor duorum majorum loculorum ab externa facie visa.
5. Semina quatuor figuræ 4. ab interna facie visa.
6. Capsula (ut vulgo) clavata disperma a latere visa, in pedicello resupinata.
7. Capsula eadem a facie aut a tergo visa.
8. Capsula eadem, altera valvula amota. Semen, quoad formam recte, quoad affixionem falso aut obscure, depictum est. Hilum ut in aliis speciebus revera lineare est.

TAB. VI.

COMMELYNA SIKKIMENSIS.

6. Commelyna sikkimensis, nov. sp.

Folia sub-glabra lanceolata. Spathæ complicatæ, basi cordatæ, acutæ sparsæ. Semina 3 rugoso-reticulata, quorum duo sparsa unum diutius in loculo retentum est.

Hab. In convallibus provinciæ Sikkim ad 2,000-4,000 ped. alt. In Assam.

Pedunculo inferiore flores inpositi vulgo 3-4 masculi longe exserti : pedunculo superiore flores 4-5 quorum duo saltem inferiores perfecti. Capsulæ loculus tertius tardius vel omnino nunquam dehiscit. An C. communis mera varietas, loculis omnibus 1-ovulatis gaudens?

Vidi specimina viva spontanea numerosa.

EXPLICATIO TABULÆ VI.

Planta e specimine recente depicta.

1. Capsula matura a latere visa in pedicello resupinata.
2. Capsula matura a tergo visa.
3. Capsula matura a facie visa.
4. Capsulæ dehiscentis horizontalis sectio. Loculus tertius minor tardius (neque eodem tempore ut loculi majores) dehiscit.
5. E seminibus majoribus alterum a facie externa visum, et 6. alterum a facie interna visum.
7. Semen tertium minus a facie interna visum.

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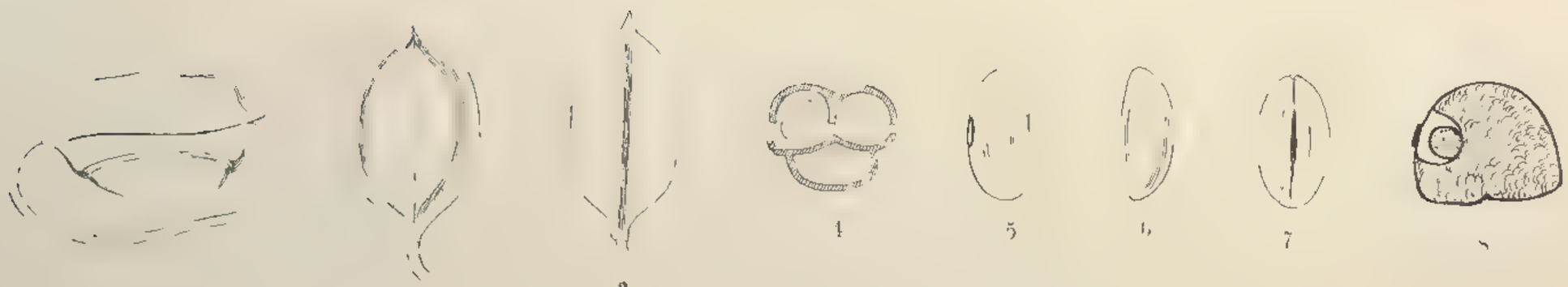
Drawn by Gopal Chandra Das,
Botanical Garden, Calcutta

Litho by ... Calcutta, Student,
Govt School of Art, Calcutta



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Drawn by Gopal Chandra Das
at the Govt. School of Art Calcutta

Litd. by Nullas Pal Student
Govt. School of Art Calcutta

TAB. VII.

COMMELYNA RAJMAHLENSIS.

7. Commelyna rajmahlensis, C. B. Clarke in Linn. Journ. xi. p. 444.

Folia minuscula subglabra late oblonga aut anguste lanceolata, spathæ complicatæ, basi cordatæ, acutæ sparsæ. Semina 3 lævia quorum duo sparsa unum in loculo retentum.

Hab. In collibus Rajmahl. ad 500 ped. alt.; in Chota Nagpore ad 500-2,000 ped. alt.

Folia, ut in multis aliis speciebus, sat variabilia, elliptica oblonga aut anguste lanceolata acuta. In quaque spatha unica capsula vulgo maturat. Semina subæqualia quam in vicinis speciebus magis elongata: plus minus appendiculata. Luculo tertio aliquando deficiente capsula disperma videtur.

Vidi specimina viva spontanea numerosa.

A species very near C. appendiculata infra: the spathes are less elongated, less hairy, and the seeds much smaller.

I have a strong suspicion that this species is the plant figured by Dr. Wight (Icones t. 2067) as Heterocarpus glaber. The capsules would commonly be found in the state figured by him, *i. e.* with one cell of the capsule alone remaining on the pedicel. Judging from the description Heterocarpus oligotrichus Hassk. Commelynaceæ, p. 7 is the same.

EXPLICATIO TABULÆ VII.

Planta ex specimine Rajmahlensi exsiccato depicta.

1. Capsula matura a latere visa in pedicello resupinata.
2. Capsula matura a tergo visa.
3. Capsula matura a facie visa.
4. Capsulæ dehiscentis horizontalis sectio.
5. Semen a facie externa visum.
6. Semen a latere visum.
7. Semen a facie interna visum.
8. Seminis horizontalis sectio.

TAB. VIII.

COMMELYNA KURZII.

8. **Commelyna Kurzii C. B. Clarke in Linn. Jour. xi. p. 444. Commelyna sp. No. 10 ex herb Hk. f. et Th. C. longifolia? Kunth Enum. iv. p. 58 Thwaites Ceylon Prodr. p. 322 Miquel Flor. Ind. iii. p. 534.**

Folia anguste lanceolata pulverulento-pilosa. Spathæ brevissime complicatæ aut vix cucullatæ, subterminales adgregatæ. Semina 3 (quorum duo sparsa unum in loculo retuntum) vel 2, lævia.

Hab. In collibus Rajmahl ad 500 ped. alt.

Distributio Indica. A Zeylaniâ secus utramque oram Peninsulæ usque ad Vindhya jugum et Punjab.

Species C. obliquam omnino referens. Spathæ viscoso-pilosæ aut glabræ. Semina duo majora eadem ac C. obliquæ: semen tertium multo minus, aliquando obsoletum, ut in C. appendiculâ videtur.

Vida specimina sicca spontanea.

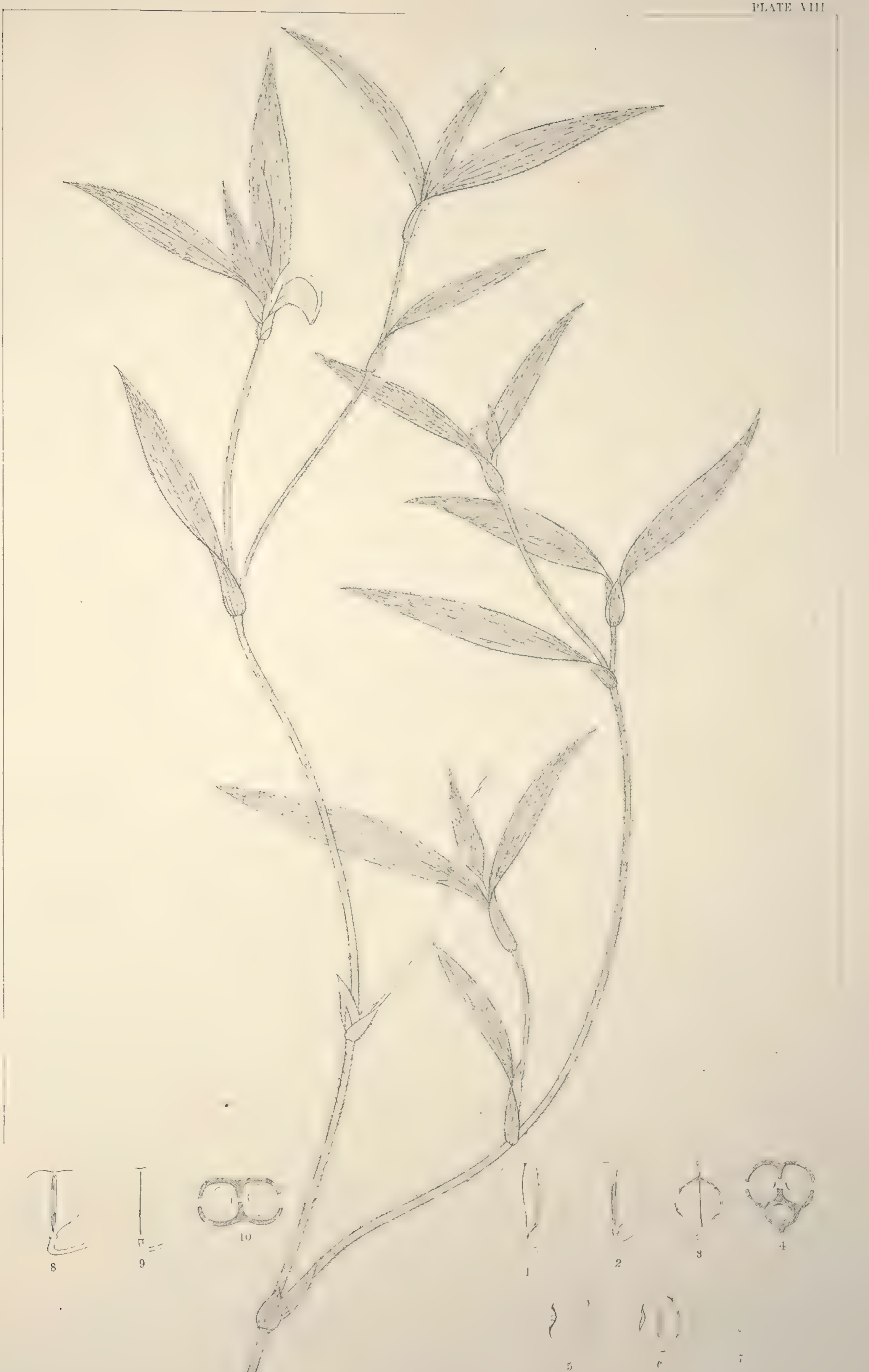
This is a species somewhat doubtfully distinct from Commelyna obliqua. The two larger seeds of C. Kurzii are exceedingly like the seeds of C. obliqua but exhibit the marked whitening of the edges of the latter less characteristically. When the third cell of C. Kurzii is suppressed, there is nothing to distinguish the 2-celled capsule from a 2-celled capsule of C. obliqua. However in all the specimens I have seen of C. Kurzii, some ovaries at least shew the third unequal cell: moreover the mealy piloseness of the leaves generally enables C. Kurzii to be separated from C. obliqua without reference to the capsules. Sulp. Kurz who brought excellent specimens of thisplant from the Rajmahl hills still regards it as a variety of C. obliqua.

As to the synonym C. longifolia. The single scrap which I have seen of C. longifolia, issued so named from Kew, is the present C. Kurzii. I have retained my own name because I can find nothing in the published descriptions to shew that C. longifolia is anything more than a synonym of C. obliqua.

EXPLICATIO TABULÆ VIII.

Planta ex specimine Rajmahlensi exsiccato, nimis hirsuta et quasi stipulata depicta est.

1. Capsula matura normalis a latere visa.
2. Capsula normalis a facie visa.
3. Capsula normalis a tergo visa.
4. Capsulæ normalis dehiscentis horizontalis sectio.
5. Seminum majorum alterum a facie externa visum et 6. alterum a facie interna visum.
7. Semen tertium minus a facie interna visum.
8. Capsula (loculo clauso abortiente) a tergo visa.
9. Capsula eadem a latere visa.
10. Capsulæ ejusdem horizontalis sectio.



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Drawn by Gopa Chandra Das
Bhavan Calcutta

Litd by Chunilá Pás Student
Govt School of Art, Calcutta

TAB. IX.

COMMELYNA OBLIQUA. α genuina.

9. Commelyna obliqua Hamilton in Don Prodr Flor. Nepal, p. 45. C. communis Roxb. Flor. Ind. I. p 171, et t. 1018 in Calc. Herb. C. polyspatha, Wight Icones, t. 2066. Trithyrocarpus paleatus et Trithyrocarpus oligospatha Hassk Commelynaceæ, p. 25 Commelyna gelatinosa Edgworth, Walp Ann. VI. p. 159. Heterocarpus? obliquus Hassk. Com melynaceæ, p. 7. C. paludosa Kunth Enum. IV. p. 51. Miq. Flor. Ind. III. p. 533. Hassk. in Plant. Junghuhn. p. 137. C. Donii Kunth Enum. IV. p. 58. C. paleata Miquel Flor. Ind. III p. 534.

Folia subglabra elliptico-lanceolata aut lanceolata. Spathæ cucullatæ turbinatæ (at plus minus secundæ et uno latere producto-acutæ) subterminales adgregatæ (vel in δ. Mathewii solitariæ). Semina æqualia 3 aut 2 lævia, omnia sparsa-

Var α. genuina. Semina 3. Spathæ adgregatæ cum foliis subglabræ.

Var β. viscida. Semina 3. Spathæ adgregatæ cum foliis rubro-viscido-flocculosæ: imo tota planta viscosissima manibus hærens.

Var γ. paludosa. Semina 2. Spathæ adgregatæ subglabræ

Var δ. Mathewii. Semina 3. Spatha solitaria. Forma pygamæa.

Hab. α. In Bengalia ubique.

β. In collibus Khasia ad 3,000-5,000 ped. alt.

γ. In delta Gangetica.

δ. In jugo Himalaya ad 7,500 ped. alt.

Distributio. Indica. Var. α et γ. A Zeylania ad Himalayan. In Birma et Malaya.

Pedunculus inferior sæpius obsoletus. Pedunculus superior 3-6 flores gerit quorum duo saltem inferiores perfecti. Planta vulgo majuscula foliis 4-6-uncialibus, sed exempla gradatim minora obvia, et in Var. δ. Mathewii tota planta aliquando vix 4-uncialis. Species capsula symmetrica et seminibus æqualibus distincta.

Vidi specimina quatuor varietatum viva spontanea, varietatum α et γ numerosa.

"Loculi 1-spermi: fructus 3- 2-spermi: semina globoso-lenticularia brunnea margine, ubi loculis adnata fuere, albido." Hassk. in plantæ Junghuhnianæ, p. 140, bene. The whitening however of the edges of the seeds takes place where they are not adnate to, but closely pressed by, the loculi.

Dr. Hasskarl states that his C. paludosa has the fruits 3-celled, but sometimes by abortion 2-celled. I have frequently met 3-celled and 2-celled fruits on the same plant: the 2-celled fruits being without a trace of the third cell.

The spathe during inflorescence in this species is often filled with a mucilaginous substance: C. gelatinosa Edgworth is untenable even as a variety.

The series from the most glabrous form of Var α genuina to the most viscidly hairy of Var β viscida is unbroken. This series has been all issued from Kew as C. obliqua: and though the extreme form of Var. β viscida would appear from a solitary specimen to any one a good species, I believe the hand which reduced it to a mere variety of C. obliqua to have been a very judicious one. If this reduction is accepted much rather will all the other synonyms quoted above be reduced also.

The variety δ. Mathewii is a remarkably degraded high level form which at first I thought would make a species, but W. S. Atkinson considers it a variety only.

The figure given opposite is copied from Roxburgh's own figure of C. communis, so that there can be no doubt that C. communis Roxb. is the present plant. Roxburgh gives sections of the capsule which render the certainty more sure. C. obliqua is a common weed throughout Bengal and the native gardeners of the Calcutta Botanic Garden still know it traditionally by the name C. communis.

EXPLICATIO TABULÆ IX.

Planta ex tabula 102. Roxburghii exscripta.

Spatha dimidiata cum floribus ex tabula 102. Roxburghii exscripta.

1. Capsula matura normalis a latere duorum loculorum visa: in pedicello semi-erecta nec omnino resupinata.
2. Capsula matura a tergo loculi visa.
3. Capsulæ dehiscentis horizontalis sectio.
4. Semen a facie externa visum.
5. Semen a facie interna visum.
6. Semen a latere visum.
7. Seminis horizontalis sectio.
8. Capsula matura (forma disperma) a latere visa.
9. Capsula eadem a tergo loculi visa.
10. Capsulæ ejusdem horizontalis sectio.

TAB. X.

COMMELYNA OBLIQUA. β viscida.

EXPLICATIO TABULÆ X.

Planta ex specimine Khasiano exsiccato depicta.

Drawn by G... Chandra Das
Bota... Garden Calcutta.

Litho by Kamala Nath Pal, Stu...nt,
Govt ... Art Calcutta.

TAB. XI.

COMMELYNA OBLIQUA. β Mathewii.

EXPLICATIO TABULÆ XI.

Planta ex specimine Sikkimensi recente depicta.

TAB. XII.

COMMELYNA SUFFRUTICOSA. β

10. Commelyna suffruticosa Kunth Enum. IV. p. 57. Miquel Flor. Ind. III. p. 534. Spathodithyros suffruticosus Hasskarl. Commelynaceæ, p. 11. Commelyna Simsoni C. B. Clarke in Linn. Journ. XI. p. 446, et C. rugulosa C. B. Clarke in Linn. Journ. XI. p. 446.

Folia subglabra aut pilosa lanceolata. Spathæ cucullatæ turbinatæ aut brevissime complicatæ. Semina 2 grosse punctata.

Var. α. Simsoni. Spathæ subterminales adgregatæ

β. rugulosa. Spathæ sparsæ, pedunculis bracteatis elevatæ.

Hab. Var. α. In silvis Mudhopoor dictis prope Dacca.

Var. β. In silvis Terai prope basin Himalayæ et in convallibus provinciæ Sikkim ad 0-1,500 ped. alt.

Distributio Indica. Var. β. In India centrali. In Burma et Malaya.

Pedunculus inferior obsoletus : superior 3-8 (vel etiam 16) flores gerit quorum 2-6 inferiores hermaphroditi capsulas maturant. Petala (in omnibus speciminibus mihi saltem obviis) alba et antheræ omnino flavæ, nec cæruleæ.

Vidi specimina viva spontanea numerosa.

The old descriptions of Commelyna suffruticosa contained no account of the capsule and seeds, and it was therefore only on receiving Dr. Hasskarl's Commelynaceæ, that I was enabled to identify my Bengal plants with it. My name Commelyna Simsoni has the theoretic priority as the earliest printed with a sufficient diagnosis.

Mr. Kurz reduced my Commelyna rugulosa as a variety of Commelyna Simsoni from my original specimens : and I have since collected series of specimens shewing that he was right.

EXPLICATIO TABULÆ XII.

Planta ex specimine recente depicta.

1. Spatha dimidiata.
2. Sepala et petala.
3. Ovarium cum stylo et stamina.
4. Capsula matura a tergo loculi visa, semi-erecta.
5. Capsula eadem a latere visa.
6. Capsulæ ejusdem horizontalis sectio.
7. Semen alterum a facie externa visum et 8. alterum a facie interna visum.

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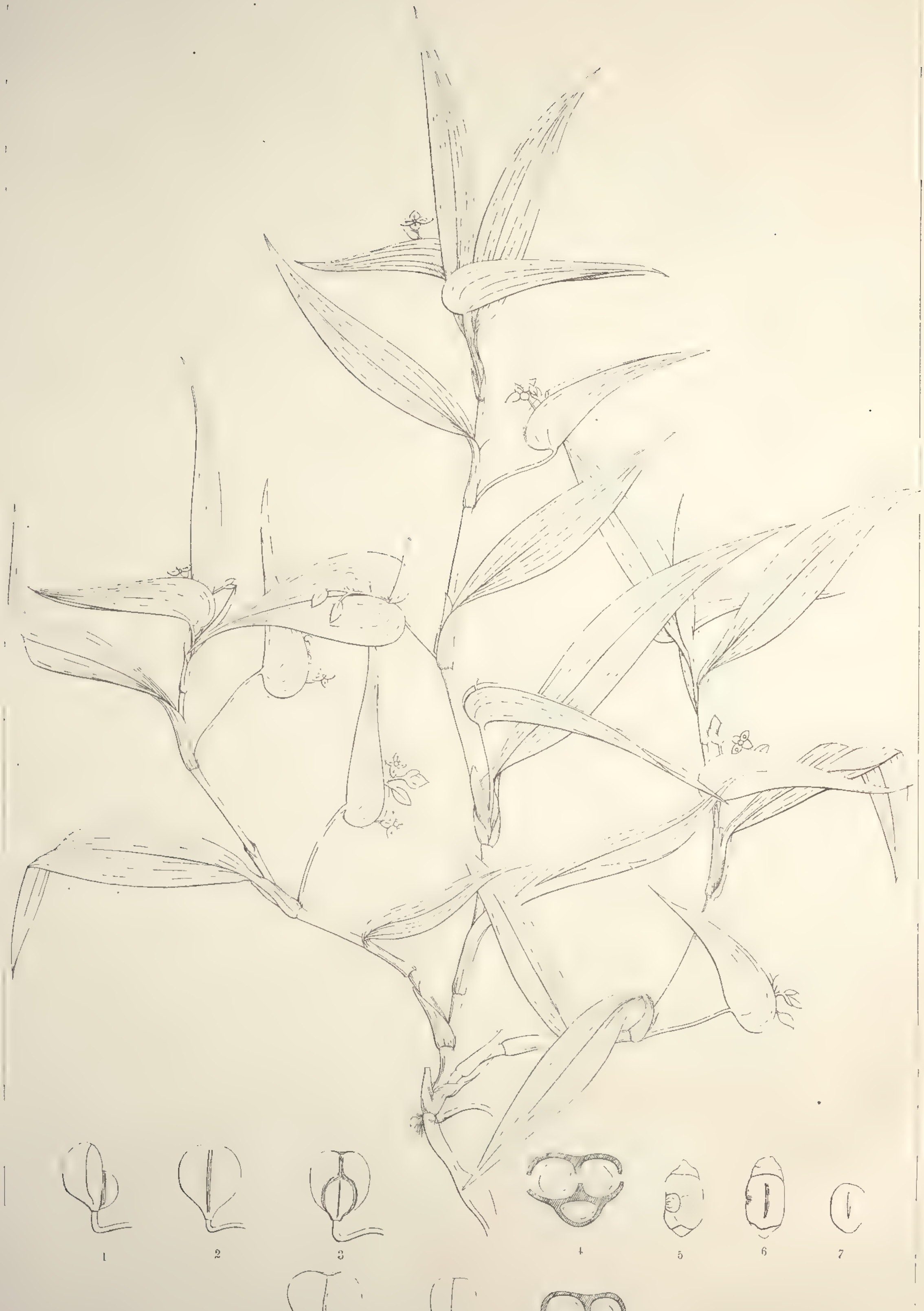
Drawn by Gopal Chandra Das,
Govt. School of Art, Calcutta

Lithography by Chintaharan Das Student
Govt. School of Art, Calcutta



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Lithographed by Tarapada Pal Student
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TAB. XIII.

COMMELYNA APPENDICULATA.

11. **Commelyna appendiculata nov. sp. Commelyna sp. 4, ex. herb Hook. f. et Th.**

Folia subglabra lanceolata. Spathæ complicatæ, basi cordatæ, elongato-lanceolatæ, sparsæ. Semina 2, vix sorobiculata, utrinque attenuata dealbata quasi-appendiculata ; aut semina 3 parvulo loculo capsulæ basi addito.

Hab. In convallibus Himalayæ provinciæ Sikkim ad 0-2,000 ped. alt. In sylvis provinciæ Chota Nagpore ad 2,000 ped. alt. In sylvis Mudhopoor dictis ad 100-250 ped. alt.

Pedunculus inferior vulgo unicum florem masculum habet : superior 3-6 flores gerit quorum 2-3 inferiores vulgo perfecti. Petala cærulea aut alba. Capsularum loculi in eadem planta 2 aut 3 videntur : si 3 loculi adsint, tertius indehiscens parvulus inferius apponitur et semen inappendiculatum tenet. Spatha prope basin intus (et sæpe extus) longis albis pilis munita, versus apicem minute scabrida, læte venosa.

Vidi specimina viva spontanea.

[Commelyna maculata and C. striata Edgworth in Linn. Trans. Vol. XX. pp. 89, 90 must be species unknown in Bengal, assuming the descriptions of the capsules and seeds to be correct in every particular.]

EXPLICATIO TABULÆ XIII.

Planta ex specimine recente depicta.

1. Capsula (forma magis evoluta 3-sperma) a latere visa, semi-erecta.
2. Capsula eadem a facie visa.
3. Capsula eadem a tergo visa.
4. Capsulæ ejusdem horizontalis sectio.
5. Ex duobus seminibus majoribus alterum a facie exteriore visum et 6. alterum a facie interiore visum.
7. Semen tertium minus a facie interiore visum.
8. Capsula (forma minus evoluta 2-sperma) a tergo loculi visa.
9. Capsula eadem a latere visa.
10. Capsulæ ejusdem horizontalis sectio.

II.—ANILEMA. Kunth Enum. IV.. p. 64.

Stamina 6 vel 5, 4, 3 : quorum 3 aut 2 perfecta similia, cætera sterilia difformia. Pedunculi ad dichotomas bracteati. Capsula regulariter trilocularis elliptica apice acuta. Semina in quoque loculo unica serie superimposita, vel solitaria.

Sect 1. Ovula 9 vel plura. Semina (nisi casu) 9 vel plura.
2. Ovula 6. Semina (nisi casu) 6.
3. Ovula 3. Semina (nisi casu) 3.

This genus is generally easily distinguished from Commelyna by the inflorescence being subpaniculate, and the peduncles entirely exserted from the bracts at the branching of the panicle. But in Anilema spectabile (which has two perfect stamens and monoliform hairs on the filaments) the bracts are sub-cucullate and the peduncles included therein. This is the only Anilema, known to me, not distinguishable at once from Commelyna by its inflorescence : but in this species the capsule and seeds equally as the stamens leave no doubt that it belongs to Anilema rather than to Commelyna.

In the species of Anilema with 2 perfect stamens, there are often only 3, sometimes only 2, sterile difformed stamens : but in large specimens of the same species sometimes 4 sterile stamens are seen. So in the species with 3 perfect stamens, the barren stamens are 2 or 3 often on the same panicle. The pains which have been taken in describing these sterile stamens seem to me ill-bestowed.

The number of fertile stamens in each species is in general tolerably constant. But Anilema lineolatum, which has generally 3 perfect stamens, has one of these sometimes smaller, sometimes altogether absent. So in Animela protensum, the fertile stamens are normally 3 but not infrequently 2 only.

In specific distinctions, stress has been laid on "filamenta barbata," as opposed to "filamenta imberbia." These monoliform hairs often are very dfficult to find in the bud, being greatly developed at the time of expansion of the flower. Thus R. Brown assigns to Anilema vaginatum bearded filaments (as I have always seen them) whereas Wight found them beardless, though it is clear from his figure that he had got the true plant.

On the whole I find that, as in Commelyna, the most constant characters are furnished by the capsule and seeds.

Dichæspermum of Wight differs by having the seeds in two rows in each cell. Hasskarl in the last revised list of genera in his Commelynaceæ says "gemmulæ orthotropæ 2-seriatæ." In Wight Icones t. 2076, the capsule is shewn with seeds in one row, the ovary with ovules in two rows. I possess full specimens of the so-called Dichæspermum ochraceum : they have the seeds in one row.

The fact is that both in Anilema and in Dichæspermum the ovules are in two rows : in Anilema the seeds, as in the pod of a pea but placed much closer together, appear in one row : in Dichæspermum the seeds slightly dovetail but form two distinct rows.

Tab. XIV. fig. 6. is an ideal horizontal section of the ovary of an Anilema. The 6 terminal points marked H are the points of attachment of the ovules so that (as is generally the case) there are two confluent placental lines which in Anilema are at the inner angle of each cell. The ovules are thus in two rows, the points of attachment along each placental line being alternate, as is intended to be shewn in Tab. XIV. fig. 7, which represents the appearance looking towards the axis of the ovary when the back of one cell has been removed. As shewn correctly in Wight's pictures, when the ripe valve dehisces from the capsule of an Anilema, the seeds remain on one side entirely : this is because the seeds in ripening grow so as to fill the cell closely, and each seed fits accurately to the next. The capsule valve ultimately dehisces loculicidally at the points E, F in Tab. XIV. fig. 6, and the whole of the septum to the very axis comes away with it. Hence in removing one valve of an Anilema capsule, two rows of seeds are generally seen as in Tab. XIV. fig. 9 : but the seeds are nevertheless here strictly in one row in each loculus and the capsule depicted in Tab. XIV. fig. 9, contains 15 seeds only.

I suspect mistakes have occurred : notably in the case of the so-called Dichæspermum ochraceum which is a true Anilema.

The capsule in several species of Anilema becomes more or less lustrous or lead-blue : Aclisia however is well separated by the seeds being in two or more rows in each cell of the capsule.

Dictyospermum of Wight is a very convenient subdivision of the genus if the character is extended to include all the 3-seeded species : *i. e.* if it is made equivalent to my sect. 3 : but Wight has by his name intended to narrow Dictyospermum to those species which have lacunar rugose seeds.

Species infra descriptæ.

Sect I.

1. Anilema scapiflorum.
2. A. lineolatum.
3. A. divergens.
4. A. Hookeri.
5. A. nanum.
6. A. triquetrum.
7. A. spectabile.

Sect II.

8. A. nudiflorum.
9. A. ensifolium.

Sect III.

10. A. vaginatum.
11. A. protensum.
12. A. ovatum.

TAB. XIV.

ANILEMA SCAPIFLORUM.

1. Anilema scapiflorum, Wight Icones t. 2073. Commelyna scapiflora, Roxb. Flor. Ind. I. p. 175 et t. 1521 in Calcutta Herbario. Anilema tuberosum, Hamilton in Wallich Cat. n. 5207. Murdannia scapiflora, Royle Illustr. t. 95.

Folia ensiformia, subglabra, omnia radicalia. Scapa radicalis; panicula stricta. Semina 15-21 nec rugosa nec reticulata.

Hab. In sylvis Mudhopoor dictis prope Dacca. In monte Parasnath ad 4000 ped. alt. In Bengalia occidentali.

Distributio Indica. In Himalaya boreali-occidentali ad 4000 ped. alt. In Peninsula indica. In Burma.

Radix plus minus tuberosa unde nomen Hamiltonianum. Scapus in planitie Bengalensi 12-18 uncialis, in montosis sæpe 2-6 uncailis, "ad articulum singulum remotum vagina parva solitaria cingitur," (Roxb.) stamina 3 fertilia barbata.

Vidi specimina viva spontanea numerosa.

Roxburgh states the leaves to appear after the flowering is completed: this is generally the case on Parasnath, but in the plains the leaves and flowers are often simultaneous. The seeds are peculiarly columnar (basaltic) and by their absence of wrinkles and reticulations unlike the seeds of any other species of Anilema known to me.

Anilema Loureirii as described by Hance in Seemann's Journal of Botany 1868 is different not merely by the stamens but by the seeds.

The plants that have been issued from Kew as Anilema scapiflorum all belong to the plant called infra Anilema divergens: at all events they are quite unlike the true A. scapiflorum: and the Ceylon plant in Thwaites Enum. p. 322 called Anilema scapiflorum β minus is not A. scapiflorum Wight. The Ceylon specimens in the Calcutta Herbarium are without fruit: they somewhat resemble Anilema lineolatum β divergens, but are still more like Dichæspermum lanceolatum of Wight.

EXPLICATIO TABULÆ XIV.

Planta a specimine Bengaliæ orientalis exsiccato depicta.

1. Capsula matura a latere visa.
2. Capsulæ ejusdem dehiscentis horizontalis sectio.
3. Semina unici loculi ejusdem capsulæ in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.
5. Unicum semen ab interna facie visum.
6. Anilematis capsulæ typicæ fictæ horizontalis sectio: H, H, lineæ placentales: E, F, linea futuræ dehiscentiæ valvularum.
7. Capsulæ ejusdem fictæ junioris verticalis sectio.
8. Capsulæ ejusdem fictæ maturæ verticalis sectio.
9. Capsula matura Anilematis scapiflori, unica valvula amota: semina duorum loculorum ab externa facie, quasi biserialia, unici loculi simulatione, visa sunt.

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Drawn by Gopal Chandra Das
Bhowanipore, Calcutta

Lith by Jadu Nath Das Student
Govt School of Art, Calcutta

TAB. XV.

ANILEMA LINEOLATUM.

2. Anilema lineolatum, Kunth Enum IV. p. 69. Miquel Flor. Ind. III. p. 539 charact. emend. Hassk Commelynaceæ, p 36 cum syn. A. elatum Dalzell in Hook Journ. Bot. III p.137. Anilema herbaceum ex herb Hk f. et Th. C. B. Clarke in Linn. Journ. IX., p. 448. Miquel Flor. Ind. III., p. 536 exclus. syn. Roxb. A. latifolium, Wight Icones t. 2072.

Suberecta robusta. Folia late lanceolata basi subito angustata vaginis distantibus. Panicula subcorymbosa terminalis ramis sub-dichotome alternis, bracteis marcescentibus sub-vaginantibus. Stamina 3 (raro 2) perfecta. Semina 9 (vel abortu 9-6) tuberculato-rugosa.

Hab. In montibus communis : Himalaya ad 500-8000 ped. alt. : Khasia ad 500-5000 ped. alt. ; in Parasnath et in Chota Nagpore ad 500-2000 ped. alt.

Distributio Indica. In montibus Peninsulæ Indicæ. In Birma et Malaya.

Folia glabrata albo-marginata, basi rotundata. Paniculæ robustæ rami alterni cum sepalis herbacei virides. Ad dichotomias paniculæ bracteæ breves, inferiores vaginantes, basi latæ apice subito acuminatæ. Capsula majuscula plus minus albido plumbea parietibus crassis.

Vidi specimina viva spontanea numerosa.

A common but as here limited rather too critical a species for while very variable itself it is only separated by trifling characters from several other species.

When in fruit with only two seeds perfected in some cells of the capsules it is very near Anilema ensifolium, which however has the flowers more closely packed on the panicle branches and all the lower flowers on a panicle branch barren.

The fertile stamens in A. lineolatum are sometimes 2 more usually 3 and then the barren stamens vary greatly, being sometimes nearly obsolete, at other times about as big as the fertile stamens but with imperfect empty anthers. In this young state without fruit it is much like Aclisia indica, and I have in Linn. Journ. XI. p. 443 referred a young specimen of Aclisia indica here by mistake under the name Anilema lineolatum γ viscidum. It may be seen however by comparing the figures of the flowers in Tab. XV. and Tab. XXIX that in Anilema the fertile stamens alternate with the barren, in Aclisia the three fertile stamens are unilateral standing together.

Commelyna herbacea Roxb. Flor. Ind. I. p. 175 and t. 1770 in Calcutta Herbarium was referred here by me in Linn. Journ. XI. p. 448, but I now think Dr. Hasskarl right in rejecting it. In Roxburgh's picture the dissections of the capsule and seeds must have been taken from a plant of Anilema lineolatum or one of the very closely allied species : but they appear to have been subsequently added to the drawing of the plant itself, which looks to me as though taken from one of the Malayan Aclisiæ. At all events it differs widely from Anilema lineolatum and all the allied species in the sheaths of the upper leaves which are imbricated so as completely to conceal the stem ; and in the semi-corolloid texture of the panicle bracts and sepals.

EXPLICATIO TABULÆ XV.

Planta a Tab. 2072, Wight Icones exscripta est.

Flos unicus auctus ab eadem Tab. 2072 exscripta est.

1. Capsula matura regulariter trigona a latere visa.
2. Capsulæ ejusdem dehiscentis horizontalis sectio.
3. Semina loculo unico ejusdem capsulæ in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.
5. Ex iisdem tribus seminibus intermedium a facie interna visum. Hilum vix lineare.
6. Paniculæ parva pars bracteas exhibens.

TAB. XVI.

ANILEMA DIVERGENS.

3. Anilema divergens nov. sp. i. e. Anilema herbaceum β divergens C. B. Clarke in Linn. Journ XI., p. 448. Anilema scapiflorum Hk. f et Th. in herb.

Erecta simplex robusta stricta. Folia lineari-lanceolata basi haud subito angustata. Panicula stricta terminalis brachiata, ramis subopposítis aut subverticillatis. Stamina 3 perfecta. Semina sœpius 12 (vel ad 18) lacunoso-rugosa.

Hab. In collibus Khasia ad 5000-6000 ped. alt.

Vidi specimina viva spontanea numerosa.

Folia quam in A. lineolato multo angustiora, vix albo-marginata, subglabra aut pilosa, imo cum caule valde pilosa. Bracteæ breves, breviter vaginantes. Filamenta barbata.

This plant differs from A. lineolatum by two characters which appear to go inseparably together, viz., linear leaves and a brachiate panicle. I therefore now give it specific rank as did Drs. Hk. et Th. in their distribution of herbarium Indian plants: though it has nothing to do with Anilema scapiflorum as they supposed. The capsules and seeds are exceedingly like those of A. lineolatum of which I reckoned it a variety in my paper in the Linnæan Journal, Vol. XI. Since writing that paper I have observed it growing during several weeks. It is usually hairy, sometimes very hairy, and again sometimes glabrous or nearly so.

EXPLICATIO TABULÆ XVI.

Planta e specimine Khasiano exsiccato depicta, fragmento paniculæ adjecto.

N. B.—Sepala sunt tria, petala sunt tria ut in aliis speciebus Anilematis. Pictor 4, 5, petala et stamina errore finxit.

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Lith. by Pulak Nath Das
Govt. Art Press

Drawn by Gopál Chandra Dás,
Botanic Gardens, Calcutta.

Lithi[illegible] Dás Pal, Student
Gov[illegible] of Art, Calcutta

TAB. XVII.

ANILEMA HOOKERI.

4. Anilema Hookeri nov. sp. i. e. Anilema scapiflorum Var. Hk. et Th. in ms.

Suberecta. Folia late lanceolata basi subito angustata, vaginis distantibus. Panicula sub-corymbosa terminalis ramis subdichotome alternis, bracteis marcescentibus elongato-oblongis haud vaginantibus. Capsula brunnea nec plumbea.

Hab. In collibus Khasia ad 6000 ped. alt.

Vidi specimen a cl. Hookero exsiccatum.

Panicula et capsulæ quam in Anilemate lineolato multo tenuiores.

Folia vix albo-marginata.

Distributed from Kew as Anilema scapiflorum Wight Var.: but it is allied to Anilema lineolatum of which it has exactly the capsule and seeds. It is much nearer Anilema lineolatum than A. divergens of which Dr. Hk. and Th. really reckoned it a variety: so for the present I leave it as a species.

EXPLICATIO TABULÆ XVII.

Planta e specimine a Hookero in Khasia lecto depicta: fragmento paniculæ bractearum indolem exhibente adjecto.

TAB. XVIII.

ANILEMA NANUM.

5. **Anilema nanum Kunth Enum. IV. p. 65. Wight Icones t. 2077, Miquel Flor. Ind. III. p. 536. Commelyna nana Roxb. Flor. Ind. I. p. 173 et t. 1107, in Calcutta Herbario. A. Nummularia Miquel Flor. Ind. III. p. 535.**

Repens, ramosum, nanum. Folia oblonga, basi subito angustata, subglabra. Paniculæ terminales, bracteis parvis persistentibus. Stamina 3 perfecta. Semina 9-18 punctata.

Hab. In Bengalia ubique.

Distributio Indica. In Zeylania; Peninsula Indica; planitie Gangetica superiore; Burma et Java (ex specimine sub nomine Anilemate Nummularia Miquel recepto).

Vidi specimina viva spontanea numerosissima.

Roxburgh figures the filaments without hairs on them : Wight with hairs : both states occur. Flowers blue, purpurascent or even brick-red.

Anilema nanum seems remote enough by its habit from A. lineolatum, but I still am in want of a hard and fast character to distinguish A. nanum from A. divergens. Between these two stands Anilema paniculatum Wight Icones t. 2075 : this differs from A. nanum in being upright, in the numerous flowers on the panicle, and in the less markedly punctate seeds.

Anilema dimorphum Dalzell said to be = A. paniculatum (Thwaites' Ceylon Prodr. p. 322) is very different in its creeping habit and straggling depauperated panicle according to the specimen of C. P. 3025, communicated by Mr. Thwaites.

Anilema canaliculatum Dalzell in Hook. Journ. Bot. III. p. 137 is an accurate description of A. nanum.

EXPLICATIO TABULÆ XVIII.

Planta e tabula 1107 Roxburghii exscripta.

Flos auctus e tabula eadem exscripta.

1. Capsula matura a latere visa.

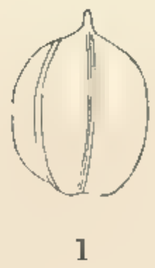
2. Capsulæ ejusdem dehiscentis horizontalis sectio. Una valvula amota semina falso biserialia videntur.

3. Semina in situ visa, valvula ut in fig. 2 amota.

4. Capsulæ horizontalis sectio.

5. Semina unius loculi in situ a facie exteriore visa.

6. Semina eadem a facie interiore visa.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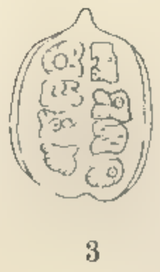
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Drawn by Gopal Chandra Das,
Botanic Gardens, Calcutta.

Lithd by Chuni Lal Das, Student,
Govt. School of Art, Calcutta.

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Drawn by [illegible]
Bibhuti Bhushan Sarkar

Litho by Ujjaya Chand Sarmán a Student,
Govt School of Art, Calcutta

TAB. XIX.

ANILEMA TRIQUETRUM.

6. **Anilema triquetrum.** Wallich Cat. No. 5220.

Repens debilis. Folia lanceolata subglabra. Pedicelli uniflori, solitari aut 2-3 fasciculati, e bractea longiuscule exserti. Stamina 3 perfecta. Semina 9 rugosa.

Hab. In Assam in aquosis.

Distributio Indica. In Peninsula Indica. In Malaya.

Vidi specimina spontanea exsiccata.

EXPLICATIO TABULÆ XIX.

Plantæ e speciminibus Assamensibus exsiccatis depictæ.

1. Capsula matura regulariter trigona trilocularis a latere visa.

2. Capsulæ horizontalis sectio.

3. Unici loculi capsulæ semina in situ ab externa facie visa.

4. Semina eadem ab interna facie visa.

TAB. XX.

ANILEMA SPECTABILE.

7. Anilema spectabile. Kurz in Herb. Brandis.

Erectum nanum. Folia lanceolata, subglabra. Spica terminalis, pedicellis fasciculatis e bracteis oblongis vaginantibus parum exsertis. Stamina 2 perfecta. Semina 9 rugulosa.

Hab. In Burma.

Bracteæ pedicellae calycesque pubescentes. Petala cærulea.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ XX.

Planta e specimine Birmannico exsiccato depicta.

1. Capsula matura trigona a latere visa.
2. Capsulæ ejusdem horizontalis sectio.
3. Unici loculi capsulæ semina in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.

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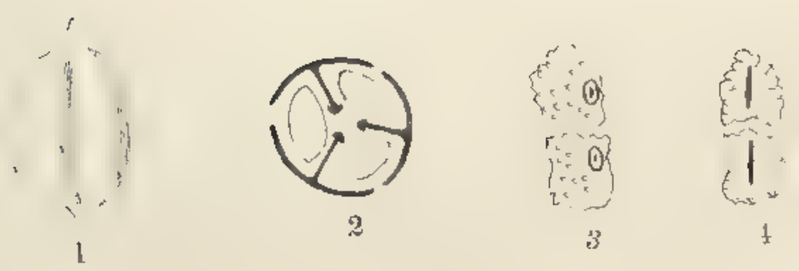
Botanic Gardens Calcutta.

Lithd by Kedar Nath Das Sc[illegible]rt,
Govt Sch[illegible] of Art Calcutta.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TAB. XXI

ANILEMA NUDIFLORUM.

8. Anilema nudiflorum Kunth Enum IV. p. 66, Miquel Flor. Ind. III. p 537. Commelyna nudiflora Roxb. Flor. Ind. I. p. 173 et t. 1108 in Calcutta Herbario. A. foliosum Hassk. Commelynaceæ p. 32, Miquel Flor. Ind. III. p. 538. A. terminale Wight Icones t. 2076. A. diversifolium Miquel Flor. Ind. III. p. 537.

Repens, ramis erectis. Folia subglabra lineari-lanceolata. Paniculæ terminales. Capsulæ chartaceæ brunneæ ad apices ramorum paniculæ undique dispositæ, approximatæ. Stamina 2 perfecta. Semina 6 rugoso-punctata.

Hab. In Bengalia ubique.

Distributio Indica. A Zeylania per totum imperium Indicum ad Burma Malaya et China.

Vidi specimina viva spontanea numerosissima.

This common species varies from 3 to 18 inches in height: in the large hill specimens the vaginæ are often very hirsute: it is then Anilema terminale of Wight.

Anilema radicans and Anilema diversifolium of Hasskarl described in Plantæ Junghuhnianæ pp. 142-144, which I formerly reduced to the present species, appear now to have been abandoned by their author. But Dr. Hasskarl still keeps up A. foliosum as distinct. I possess no authentic specimen of this but it is fully described in Plantæ Junghuhnianæ and must be the present A. nudiflorum if words can ever be trusted.

EXPLICATIO TABULÆ XXI.

Planta e tabula 1108 Roxburghii exscripta.

Flos auctus e tabula eadem exscripta,

1. Capsula matura a latere visa.
2. Capsulæ horizontalis sectio.
3. Unici loculi capsulæ semina in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.

TAB. XXII.

ANILEMA ENSIFOLIUM.

9. Anilema ensifolium Wight Icones t. 2074. A. secundum Wight Icones t. 2075. A. loriforme Hassk. in Plantæ Junghuhn. p. 143 Miquel Flor. Ind III. p. 538.

Erectum robustum. Folia linearia subglabra. Paniculæ terminales. Capsulæ plumbeo-lucidæ ad apices ramorum scorpioideorum paniculæ solitariæ vel paucæ. Stamina 2 perfecta. Semina 6 leviter rugulosa.

Hab. In collibus Khasia ad 3000-6000 ped. alt.

Distributio Indica. In montibus Peninsulæ indicæ et in Zeylania.

Capsulæ et semina quam in A. nudifloro multo majores. Flores in ramis paniculæ approximati scorpioidei, inferiores præcipue infertiles, 1-3 superiores capsulas maturantes. Rami panicularum fructu incrassati recurvati, infra bracteis vacuis obtecti.

Vidi specimina viva spontanea numerosa.

This species is best separated from the large hill specimens of A. nudiflorum by the seeds which though larger are far less deeply sculptured.

Thwaites in Ceylon Enum. p. 322 has reduced (and as appears to me correctly) A. secundum of Wight to A. ensifolium.

EXPLICATIO TABULÆ XXII.

Planta e tabula 2074 Wight Icones exscripta.

1. Capsula matura trigona a tergo loculi visa.
2. Capsulæ horizontalis sectio.
3. Unici loculi capsulæ semina in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.

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Bot. Mag. Curtis's Botanical Magazine

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Drawn by Gopal Chandra Das,

Lithd by [illegible]
Govt. Sch[illegible]

TAB. XXIII.

ANILEMA VAGINATUM.

10. Anilema vaginatum. Kunth Enum. IV. p. 67. Wight Icones t. 2076. A. pauciflorum Dalzell in Hook. Journ. Bot. III. p. 136.

Suberectum filiforme. Folia linearia subglabra. Paniculæ terminales lateralesque depauperatæ 1-5 floræ, basi vagina subcylindrica involucratæ. Stamina 2 perfecta. Semina 3 rugoso-striata.

Hab. Per oryzeta Bengaliæ late sparsa [Mymensingho, Purneah, Rungpore, Chota Nagpore, Burdwan.]

Distributio Indica. In Malabaria, India centrali et Arracan.

Planta modo bipedalis, paniculis 2-5-floris : modo 6-9-uncialis paniculis depauperatis 1-floris videtur. Filamenta in meis speciminibus barbata.

Vidi specimina viva spontanea numerosissima.

Dalzell states that his Anilema pauciflorum only differs from A. vaginatum in having three seeds. But A. vaginatum always has three seeds.

Wight figures his specimen without hairs on the filaments : he may have overlooked the hairs or they may have been suppressed : on either hypothesis there can be no doubt about so well-marked a plant and indeed Wight's figure was taken from a Bengal specimen sent by Wallich.

EXPLICATIO TABULÆ XXIII.

Planta e specimine Bengaliæ orientalis exsiccato depicta.

1. Capsula matura trigona a latere visa.
2. Capsulæ horizontalis sectio.
3. Semen ab externa facie visum.
4. Semen ab interna facie visum.

TAB XXIV.

ANILEMA PROTENSUM

11. **Anilema protensum Wallich Cat. n. 5218. Dictyospermum protensum Wight Icones t. 2071 Piletocarpus protensus. Hassk. Commelynaceæ, p. 15.**

Suberectum ramosum viscosum. Folia lanceolata subglabra. Paniculæ terminales quasi-umbellatæ. Capsulæ viscoso-pilosæ. Stamina 3 (raro 2) perfecta. Semina 3 reticulata.

Hab. In montibus vulgaris ; Himalaya ad 2000-8000 ped. alt. ; Khasia ad 0-5000 ped. alt.

Distributio Indica. In Zeylania (et Peninsula ex Wight.) In Java.

Petiolæ vaginis longis inflatis caulem involventes. Bracteæ panicularum breves vaginantes persistentes.

Vidi specimina viva spontanea numerosissima.

EXPLICATIO TABULÆ XXIV.

Planta ex specimine Khasiano sicco depicta.

Flos auctus e tabula 2071 Wight Icones exscripta.

1. Capsula matura rotundo-trigona a latere visa.

2. Capsulæ dehiscentis horizontalis sectio.

3. Semen a facie externa visum.

4. Semen a facie interna visum.

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Drawn by Gopal Chandra Das
Botanic Gardens, Calcutta

Lithd by Tha Das Pal Student,
Govt. School of Art, Calcutta.

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Lith^d by Chuni La. Das, Student,
Govt School of Art Calcutta.

TAB. XXV.

ANILEMA OVATUM.

12. **Anilema ovatum Wallich. Hook. f. et Th. in Herb. Dictyospermum montanum Wight Icones t. 2069. Dictyospermum ovalifolium Wight Icones t. 2070.**

Late repens ramis adscendentibus. Folia lanceolata aut (in eadem planta) ovalia obtusa. Paniculæ terminales depressæ aut evolutæ plus minus exsertæ. Semina 3 magna grosse reticulato-rugosa.

Hab. In Zeylania ; Peninsula Indica ; insulis Andaman ; Birma ; Malaya ; (nec Bengalia ?)

Foliorum vaginæ caulis apicem versus imbricatæ. Panicula modo his foliis approximatis fere abdita modo exserta, quoad numerum florum valde variabilis. Rami paniculæ plus minus pilosi, bracteis parvis mox deciduis. Semina in facie interiore alto canaliculo exscripta.

Vidi specimina sicco spontanea.

Exceedingly like Aclisia subumbellata in habit leaves and fruit panicle ; but the Aclisia can be recognised at once by the persistent bracts on the glabrous panicle-branches.

[There are many other Anilemas in the Calcutta Herbarium which, as not known living in Bengal, I think it best to say very little about. Anilema Kænigii Wight ex herb. Hook. f. et Th. is very near Anilema divergens : but a smaller and weaker plant. Anilema dimorphum Dalzell is also like a weak depauperated form of A. lineolatum. Anilema ochraceum Dalzell is a good species with fascicled pedicels and yellow flowers : and comes between Anilema nanum and A. triquetrum.]

EXPLICATIO TABULÆ XXV.

Planta ex specimine Andamensi exsiccato depicta.

1. Capsula matura trigona a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semen a facie externa visum.
4. Semen a facie interna visum.
4. Seminis sectio horizontalis.

III. AMELINA nov. genus.

Stamina 3 (aut 3-6 ?) ; quorum 2 (aut 2-3 ?) perfecta similia, cætera sterilia difformia. Pedunculi ramosi ad dichotomias bractiati. Capsula regulariter bilocularis bivalvis oblonga apice lata truncata fere bicornuta. Semina in quoque loculo unica serie superimposita.

Nomen ab Anilema litteris transpositis sumptum. Genus a Beauv. indicatum ex structura capsularum institutum.

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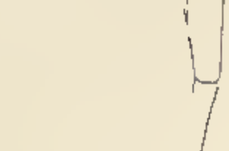

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Drawn by Gopal Chandra Das,
Botanic Garden, Calcutta

Lithographed by Das Brothers,
Govt School of Art, Calcutta

TAB. XXVI.

AMELINA WALLICHII

1. **Amelina Wallichii nov. sp.**

Erecta pubescens. Folia oblonga-lanceolata pilosa supra scabrida. Panicula terminalis, bracteis brevibus vaginantibus persistentibus. Stamina 2 perfecta filamentis barbatis, unicum sterile. Semina 6 (3 in quoque loculo) leviter reticulata. Capsula minute pubescens.

Hab ?

Vidi specimina a beato Wallichio exsiccata.

This remarkable plant appears to have been collected by Wallich on more than one occasion : but though the specimens in the Calcutta Herbarium are full and complete there is no record of the habitat.

In the dried buds I could only make out one barren stamen as above stated but there may probably be more, or occasionally more.

Anilema æquinoctiale Kunth Enum. IV. p. 72 is the same genus as the present plant, possibly may be the same species

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EXPLICATIO TABULÆ XXVI.

Planta e specimine Wallichii exsiccato depicta.

1. Flos auctus a flore inaperto sicco constructus.

2. Capsula matura a latere visa.

3. Capsulæ dehiscentis horizontalis sectio.

4. Semina a facie externa visa.

5. Semina a facie interna visa.

6. Capsulæ maturæ valvula vacua ab interiore visa, inter semina horizontalibus lineis alte constricta. (N. B. Figuræ adumbratio longe errat.)

IV. DICHÆSPERMUM R. Wight.

Stamina 6 quorum 3 alternantia sterilia difformia. Pedicelli fasciculati aut panicula terminalis. Capsula oblonga, apice acuta, regulariter trilocularis trivalvis. Semina in quoque loculo 8-20 duplici serie superposita.

Vide (under Anilema genus) the remarks on the line between this genus and Anilema. I have fallen back on the original definition of Wight, because as I have attempted to shew suprà under Anilema the " gemmulæ orthotropæ 2-seriatæ " of Hasskarl do not separate the two genera.

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Drawn by Gopál Chandra Dás,
Botanic Gardens, Calcutta

Lithd by Tulsidás Pál Student,
Govt School of Art, Calcutta

TAB. XXVII.

DICHÆSPERMUM BLUMEI.

1. Dichæspermum Blumei Hassk. Commelynaceæ, p. 41.

Repens ramosa subglabra. Folia lanceolata basi vaginantia. Pedicelli 1-4 fasciculati, plus minus exserti, axillares terminalesque. Semina c. 48 minute rugulosa (secus morem embryonali umbone notata.)

Hab. Assam in aquosis.

Distributio Indica. In Malaya ex Hassk.

Vidi specimina sicca spontanea.

I give this species for which Dr. Hasskarl is responsible but I think it can hardly be distinct from the next. At the same time, in the very large quantities of Dichæspermum from Assam, there does exist a gap between the 30-seeded and the 48-seeded specimens : and in the 48-seeded specimens, the capsules are more elongate, the seeds smaller and less angular than in the 30-seeded specimens.

EXPLICATIO TABULÆ XXVII.

Planta ex specimine Assamico sicco depicta.

1. Capsula matura triquetra a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semina in situ ex unico loculo capsulæ extracta ab externa facie visa.
4. Semen ab externe facie visum.

TAB. XXVIII.

DICHÆSPERMUM REPENS.

2. **Dichæspermum repens Wight Icones t. 2078.**

Repens ramosa subglabra. Folia ovato-lanceolata aut lanceolata basi vaginantia. Pedicelli 1-10 fasciculati parum exserti, axillares terminalesque. Semina c. 30 vix rugoso-reticulata (secus morem embryonali umbone notata.)

Hab. Assam in aquosis.

Distributio Indica. In Peninsula Indica ; in Burma.

Vidi specimina sicca spontanea.

[The plant communicated from Kew to the Calcutta Herbarium under the name Anilema paniculatum Wight is Dichæspermum juncoides Wight a good species.]

EXPLICATIO TABULÆ XXVIII.

Planta ex specimine Birmannico sicco depicta.

Flos auctus e tabula 2078 Wight Icones exscriptus.

1. Capsula matura triquetra a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semina in situ ex unico loculo capsulæ a facie externa visa.
4. Semen a facie externa visum.

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Drawn by Gopa' Chandra Das
Botanic Gardens, Calcutta

Litho by T. [illegible] Pál Sc[illegible]t
Govt Sch[illegible] Art, Ca[illegible]a.

V. ACLISIA Kunth Enum. IV., p. 74.

Stamina 3 antica fertilia : 3 posteriora multo minora, antheris minimis aut sterilibus. Capsula trilocularis subglobosa plumbeo-cærulescens, chartacea, indehiscens aut irregulariter rupta. Semina 6-10 in quoque loculo, angulata, peltatim affixa, bi-multi-seriata. Panicula terminalis.

TAB. XXIX.

ACLISIA INDICA.

1. Aclisia indica Wight Icones t. 2068 Hassk. Commelynaceæ p. 44. A. gigantea Hassk. Commelynaceæ, p. 46. A. sorzogonensis Kunth Enum IV. p. 74. Pollia indica Thwaites Enumeratio, p. 323. Pollia sorzogonensis Benth. Hongkong Flora, p. 377. Anilema secundiflorum Kunth Enum. IV. p. 69. Miquel Flor. Ind. III. p. 540.

Herba elata viscide pubescens. Folia lanceolata, inferiora basi vaginantia, 1-2 superiora distantia sessilia. Paniculа exserta sæpe ramosa. Semina lævia minute punctata.

Hab. In sylvis Terai dictis ad basin Himalayæ et in convallibus montium ad 0-1500 ped. alt. a Nepal ad Bhotan ; inde per Assam et Khasia usque ad Muneypoor, et Chittagong.

Distributio Indica. In Zeylania, Malabaria, montibus Nilgherry, insulis Andaman, Burma et Malaya.

Bracteæ oblongæ vix vaginantes persistentes. Corolla (ut semper a me visa) alba.

Planta mire Polliam Aclisia referens, quoad folia, inflorescentiam, structuram atque colorem capsulæ. Præterea in utraque planta, pedicelli et calyces albido-corollini evadunt, atque sepala accrescentia albido-corollina diu fructum amplectuntur.

Præter characteres genericos a staminibus sumptos, Aclisia indica hisce notis a Pollia Aclisia distinguitur :

Aclisia Indica : 1-2 folia superiora distantia : paniculæ princeps rachis haud crassa, vulgo 1-2-dichotoma : petioli juxta vaginas vix undulati : semina magna valde angulosa.

Pollia Indica : folia superiora approximata : paniculæ princeps rachis valde crassa nunquam dichotoma : petioli juxta vaginas undulati : semina parvula parum angulosa.

Vidi specimina viva spontanea.

Aclisia indica and Pollia Aclisia I have blundered together into one species in my paper on Bengal Commelynaceæ in Linn. Journ. XI. pp. 450, 451. In so doing I followed the weight of Botanical authority, but did not sufficiently appreciate that Dr. Hasskarl had the advantage over all his weighty opponents of knowing the plants alive. When I confounded the two species it so happened that I had collected Aclisia indica in flower only and had referred my specimens on an insufficient examination as varieties of Anilema lineolatum. The two species Aclisia indica and Pollia Aclisia are abundantly distinct, but their resemblance in the bluish fruit and in the corolloid pedicels and sepals increasing on the fruit is most remarkable.

EXPLICATIO TABULÆ XXIX.

Planta e specimine recente Sikkimensi depicta.

Flos auctus e tabula 2068 Wight Icones depicta.

1. Capsula matura subglobosa a latere visa.
2. Capsulæ maturæ horizontalis sectio.
3. Semina ab externa facie visa.
4. Semina ab interna facie (hilo) visa.
5. Stamina e flore recente excisa.

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Drawn by Gopal Chandra Das
Botanic Gardens, Calcutta

Litho by Thirst Das Pal, Students,
Govt. School of Art, Calcutta

Drawn by Gopal Chandra Das
Botanic Gardens, Calcutta

Litho by Ulaya Chand Samanta, Student,
Govt School of Art, Calcutta

TAB. XXX.

ACLISIA SUBUMBELLATA.

2. Aclisia subumbellata i. e. Pollia subumbellata C. B. Clarke in Linn. Journ. XI. p. 451. Aclisia sp. 3, Hook. f. et Th. in Herb.

Late repens, ramis adscendentibus. Folia obovata lanceolata, omnia vaginantia, suprema approximata. Panicula subglabra, depressa quasi-umbellata, ramis demum recurvis. Semina lævia vix puncticulata.

Hab In convallibus Himalayæ ad 0-2000 ped. alt. a Nepal ad Assam. In Khasiæ convallibus ad 0-2000 ped. alt. Sat communis.

Panicularum bracteæ ovatæ vix vaginantes, persistentes. Flores cærulei aut albi. Antheræ in staminibus difformibus rudimentariæ vel obsoletæ. Petioli juxta vaginas marginibus haud undulati.

Vidi specimina viva spontanea numerosa.

This species of mine I judge from the descriptions to be synonymous either with Aclisia cumingiana Hassk. Commelynaceæ p. 47, or with Aclisia celebica Hassk. Commelynaceæ p. 49, or possibly with Aclisia Zollingeri Hassk. Commelynaceæ p. 51. Or my species more probably includes two (or all three) of these. I have thought it best to keep up therefore my own specific name for the present.

This plant is at first sight considerably like Anilema ovatum.

EXPLICATIO TABULÆ XXX.

Planta ex specimine recente Sikkimensi depicta.

1. Stamina.
2. Capsula matura subglobosa a latere visa.
3. Capsulæ maturæ horizontalis sectio.
4. Semina a facie externa visa.
5. Semina a facie interna (hilo) visa.

TAB. XXXI.

ACLISIA (?) THOMSONI.

3. **Aclisia (?) Thomsoni, i. e. Dichæspermum giganteum Hassk. Commelynaceæ p. 42. Anilema sp. No. 11 ex herb. Hook. f. et Th.**

Erecta glabriuscula. Folia lanceolata valde acuminata, omnia vaginantia, suprema approximata. Panicula elongata ad apicem bracteis magnis viridibus ovato-lanceolatis mox caducis ornata. Semina, ut capsula, ignota.

Hab. Sikkim ad 2000-6000 ped. alt.

Panicula post flores expansos bracteis bracteolisque destituta videtur quâ notâ hæc planta ab aliis Aclisiis facile diagnoscitur. Ab Anilemate lineolato (et aliis speciebus Anilematis huic proximis) specimina florifera caute distinguenda ; inprimis foliis supremis basi vaginantibus vaginis imbricatis distinguuntur.

Vidi specimina viva spontanea *i. e.* unico loco multas plantas vidi.

Dr. Hasskarl refers this plant to Dichæspermum under the impression that the barren stamens are alternate with the fertile ones. The stamens are however those of Aclisia to which genus the plant by its whole habit belongs. The genus in the absence of ripe fruit, cannot be certainly ascertained.

EXPLICATIO TABULÆ XXXI.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Stamina.

Tinantia fugax (Scheidweiler) was collected on the hills near Mussoorie by Messrs. Atkinson and Levinge for a wild plant : it must be naturalised there.

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Drawn by Gora Banerjee from a plant in the Botanic Gardens, Calcutta

Lith. by Kanai Lal Nath at the School of Art, Calcutta

VI. POLLIA Kunth Enum. IV., p. 75, (inclus. Lamprocarpo Kunth Enum. IV., p. 75.)

Stamina 6 subsimilia, perfecta. Capsula trilocularis sub-globosa plumbeo-cærulescens, chartacea, indehiscens aut irregulariter rupta. Semina 6-10 in quoque loculo, peltatim affixa, bi-multi-seriata. Panicula terminalis.

(Vide observationes quoad genus sub Aclisia genere supra datas.)

TAB. XXXII.

POLLIA ACLISIA.

1. Pollia Aclisia Hassk. Commelynaceæ, p. 55. P. indica Cal. Herb. Aclisia sp. 2. ex herb. Hook. f. et Th.

Herba erecta robusta. Folia lanceolata, omnia vaginantia, superiora approximata, basi petiolarum crispato-undulata. Panicula pubescens rigida exserta, rhachi crassa haud ramosa. Semina lævia vix puncticulata.

Hab. In Himalaya a Nepalia ad Assam ad 1000-4000 ped. alt. In collibus Khasia ad 1000-3000 ped. alt. Sat communis.

Distributio Indica. In Malaya aquosa.

(Vide observationes sub Aclisia indica supra.)

Vidi specimina viva spontanea numerosa.

Pollia japonica has the panicle more elongated with the verticillate ramifications more remote : but is very near (to say the least) to Pollia Aclisia.

EXPLICATIO TABULÆ XXXII.

Planta ex specimine recenti Sikkimensi depicta ; cum flore unico aucto.

1. Capsula matura subglobosa a latere visa.
2. Capsulæ maturæ horizontalis sectio.
3. Semina a facie exteriore visa.
4. Semina a facie interiore (hilo) visa.

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Drawn by Gopal Chandra Dás,
Botanic Gardens, Calcutta.

Litho by T. [illegible] Das Lahiri,
Govt School of Art Calcutta

TAB. XXXIII.

POLLIA THYRSIFLORA.

2. **Pollia thyrsiflora.** Hassk. in Plantæ Junghuhnianæ p. 150. Lamprocarpus thyrsiflorus Kunth Enum. IV. p 76.

Herba erecta robusta. Folia lanceolata, omnia vaginantia, suprema approximata, basi petiolorum crispato-undulata. Panicula conglomerato-thyrsoidea aut fere spadiciformis. Semina lævia vix puncticulata.

Distributio Indica. In insulis Andaman et Malaya.

(Specimina a collibus Khasia in Calcutta Herbario sub nomine Pollia thyrsiflora conservata, a me potius ad Polliam Aclisia referuntur.)

Capsula et semina omnino eadem ac Polliæ Aclisia.

Vidi specimina sicca spontanea.

This "species" seems to me an extreme form of Pollia Aclisia which exhibits the greatest variety in the closeness of its panicle.

EXPLICATIO TABULÆ XXXIII.

Planta ex specimine exsiccato Andamanensi depicta.

VII. DITHYROCARPUS Kunth Enum. IV., p. 76.

Stamina 6 perfecta subsimilia. Panicula terminalis. Capsula ovata, lateraliter compressa, bilocularis bivalvis.

Semina 2, i. e. 1 in quoque loculo.

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Drawn by Gora Chandra Das,
Botanic Gardens, Calcutta

Lithd by Chandra Das Student,
Govt. School of Art, Calcutta

TAB. XXXIV.

DITHYROCARPUS PANICULATUS.

1. **Dithyrocarpus paniculatus. Kunth Enum. IV. p. 79. Floscopa paniculata Benth. Hongkong Flora, p. 377, cum syn. indicis. Miquel Flor. Ind. III. p. 542. Dithyrocarpus rufus Kunth Enum. IV. p. 79. Floscopa rufa. Miquel Flor. Ind. III. p. 542. Tradescantia paniculata Roxb. Flor. Ind. II. p. 119, et Corom. Pl. t. 109.**

Folia lanceolata, plus minus pilosa, vaginantia. Panicula plus minus rufo-pilosa, ramis numerosis adscendentibus. Semina "incano-cærulea, altero latere circa embryonalem puncturam radiatim sulcata, altero latere longitudinaliter pli-"cato-sulcata."

Hab. In montibus ad 0-7000 ped. alt. communis : etiam in planitie Bengaliæ orientalis.

Distributio Indica. In Malabaria, Burma et Malaya.

Vidi specimina viva spontanea numerosa.

In what way the numerous species proposed in Hasskarl's Commelynaceæ pp. 165, 166 differ, I cannot understand from the descriptions : nor do I possess authentic specimens : but I feel satisfied that all the Indian specimens of Dithyrocarpus belong to one species.

Moreover I do not see how to separate the African specimens of Dithyrocarpus capensis.

EXPLICATIO TABULÆ XXXIV.

Planta ex tabula 622 Roxb. exscripta.

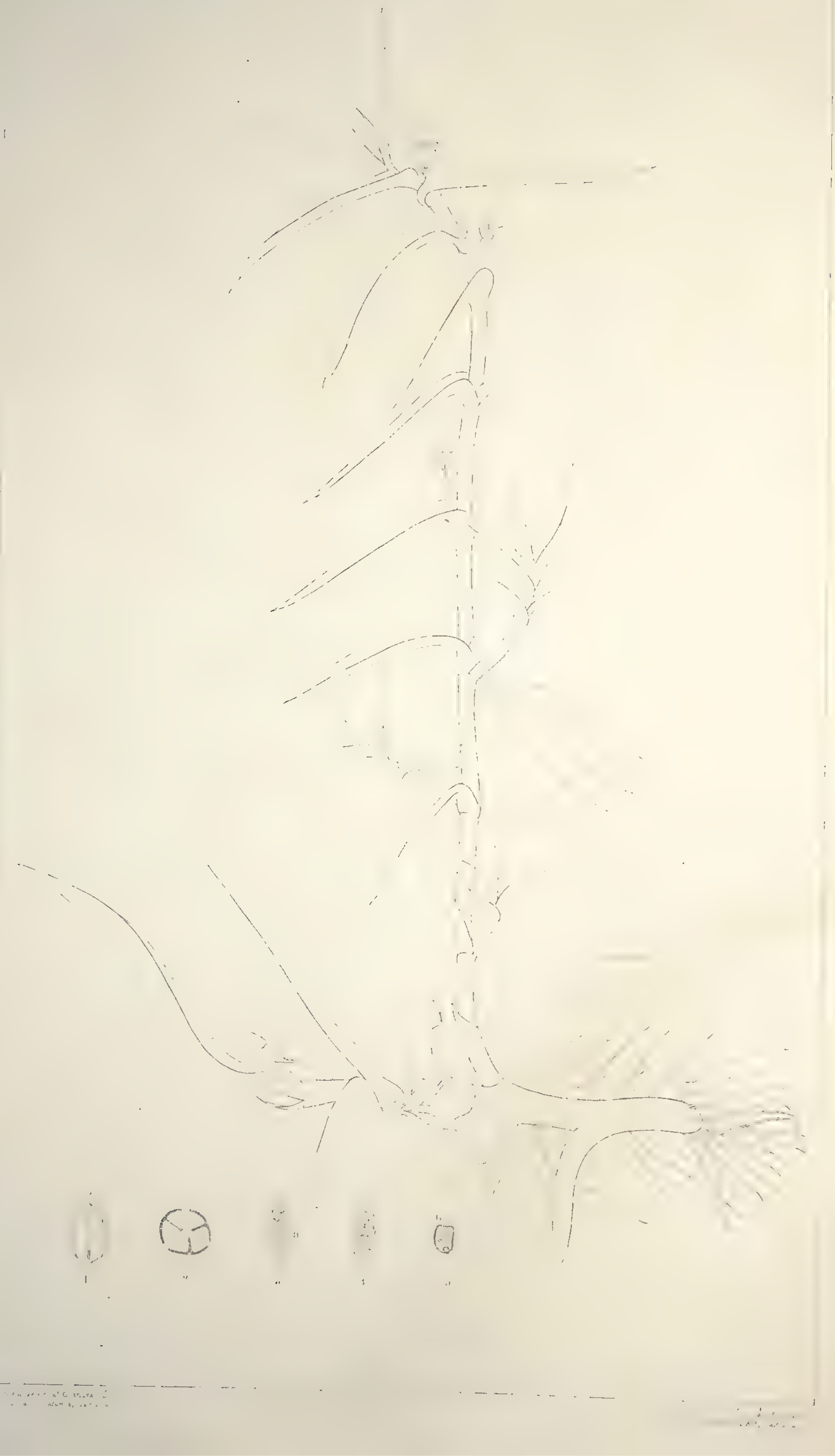
N. B. Revera sepala alba et petala numero tria sunt.

1. Capsula matura a tergo valvulæ visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semen a facie externa visum.
4. Semen a facie interna (hilo) visum.
5. Seminis horizontalis sectio.

VIII. CYANOTIS Kunth Enum. IV., p. 102.

Stamina 6 perfecta. Flores in axillis foliorum congesti aut in scorpioideis racemulis intra bracteas imbricatas nidulantes. Corolla submonopetala. Capsula elliptica acuta trilocularis regulariter trivalvis. Semina in quoque loculo 2 (rarissime, an abortu ovuli ? 1) superposita.

In some species the petals are free at the base, but sub-confluent above : in other species the corolla appears exactly monopetal.



TAB. XXXV.

CYANOTIS AXILLARIS.

1. Cyanotis axillaris. Kunth Enum. IV. p. 105. Benth. Flora Hongkong, p. 378. Hassk. Commelynaceæ, p. 107. Miquel Flor. Ind. III. p. 545. Tradescantia axillaris, Roxb. Flor. Ind. II. p. 118 et Coromandel Plants t. 107.

Folia linearia. Flores in axillis foliorum 1-6 subsessiles, cærulei albi aut purpurei. Semina rugosa-punctata.

Hab. In Bengalia ubique in aquosis.

Distributio Indica. A Zeylania usque ad Himalaya : in Burma et Malaya.

Vidi specimina viva spontanea numerosissima.

EXPLICATIO TABULÆ XXXV.

Planta ex tabula 107 Roxb. Corom. Pl. exscripta.

1. Capsula matura triquetra a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semina ex unico loculo in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.
5. Seminis verticalis sectio quoad superficiem chartæ perpendicularis.

TAB. XXXVI.

CYANOTIS CRISTATA.

2. Cyanotis cristata. Kunth Enum. IV. p. 102. Wight Icones, t. 2082. Miquel Flor. Ind. III. p. 544, Hassk. Commelynaceæ, p. 107. Tradestantia imbricata Roxb. Flor. Ind. II. p. 120 et t. 1130 in Calcutta Herbario.

Folia ovato-lanceolata. Racemuli scorpioidei, distantes, parum pilosi, bracteis ovatis falcatis. Semina in facie exteriore longitudinaliter striata 4-2 magnis punctis exsculpta.

Hab. In Bengalia vulgaris.

Distributio Indica. A Zeylania ad Himalaya : in Burma et Malaya.

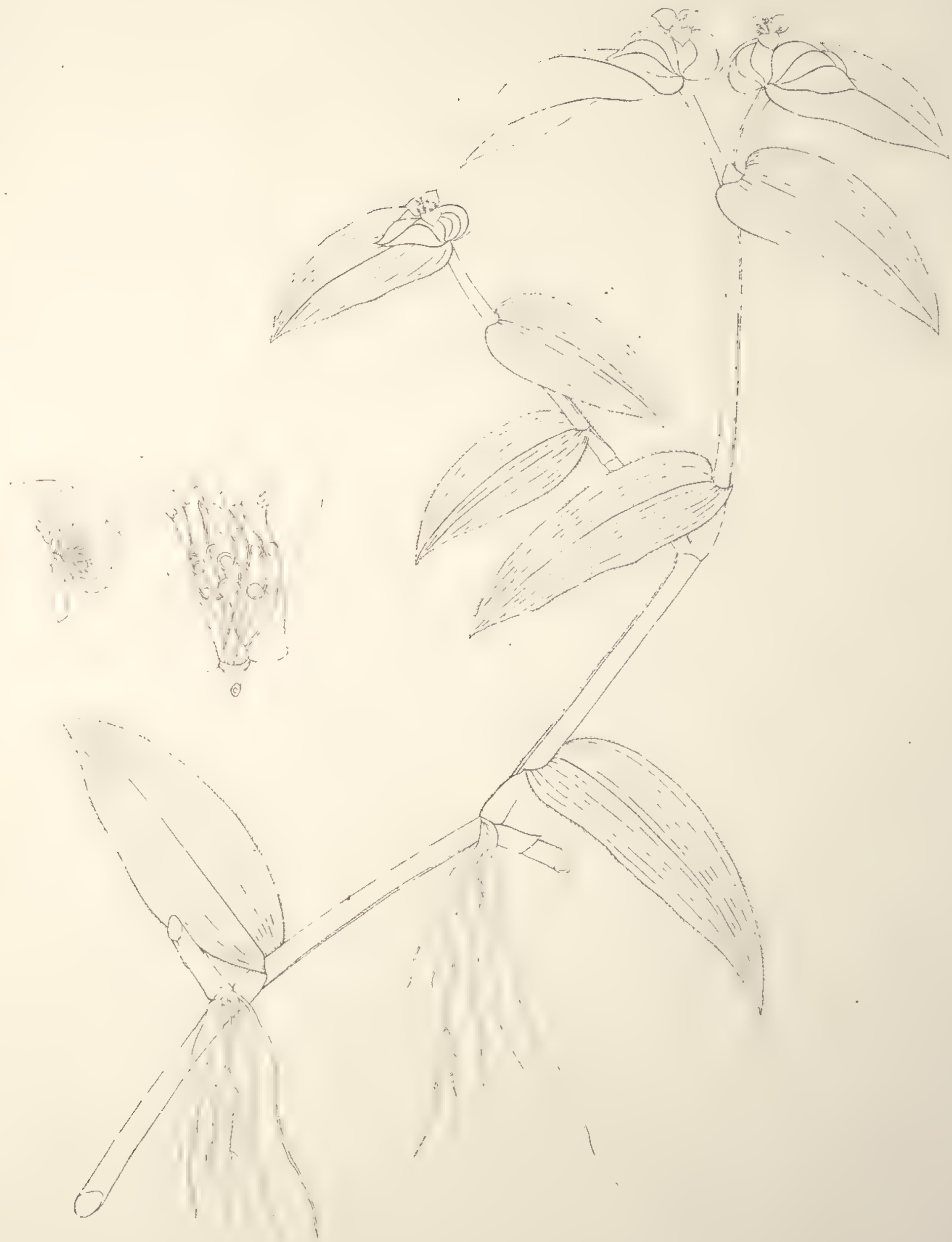
Vidi specimina viva spontanea numerosa.

EXPLICATIO TABULÆ XXXVI.

Planta e tabula 1130 Roxburghii exscripta.

Racemus et flos auctus e tabula eadem exscripta.

1. Capsula matura triquetra a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semen ab externa facie visum.
4. Semen ab interna facie visum.



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Lithographed by Dayal Chand Sharma Student,
Govt. School of Art Calcutta

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Drawn by Gopá Chandra Dás,
Botanic Gardens, Calcutta

Lith. at the Bengal Photo. Dás, Superintendent
Govt. Stationery Art Calcutta.

TAB. XXXVII.

CYANOTIS BARBATA.

3. Cyanotis barbata. Kunth Enum. IV. p. 104. Hassk. Commelynaceæ, p. 143. Tradescantia tuberosa Roxb. Flor. Ind. II. p. 119 et t. 108 in Coromandel Plants.

Folia lineari-lanceolata. Racemuli scorpioidei distantes plus minus hirsuti, bracteis lanceolatis falcatis. Semina rugoso-punctata.

Hab. In montibus communis ; Himalaya ad 500-8000 ped. alt. ; Khasia ad 500-6000 ped. alt.

Distributio Indica. In Nepalia et Himalaya boreali-occidentali. In Burma.

Vidi specimina viva spontanea numerosa.

There are several described plants very near this species. C. fasciculata Benth. Flora Hongkong, p. 378 only differs by having woolly hairs on the involucral bracts. C. barbata and C. fasciculata seem however to be good geographical varieties at least, as their areas are distinct.

C. lanceolata Wight Icones t. 2085 (vidi specimina viva in montibus Nilgherry spontanea) is unlike C. barbata : it seems a well-marked form, but I do not know how far the reduction of species might not (and ought to) be carried here. Perhaps C. Lawiana and C. rosea Wight Icones t. 2086, C. sarmentosa and C. dichrotricha Wight Icones t. 2087 and C. decumbens Wight Icones t. 2088 differ in no character except hairiness, &c. from C. barbata. In Cyanotis the color of the flowers varies purple to blue on the same plant, and the color of the monoliform hairs on the filaments is eminently variable.

Hasskarl remarks under C. barbata "Plantæ quoque e tubere tunicato globoso pubescenti fuscescenti progrediuntur," on which authority I have placed here Tradescantia tuberosa Roxb.

EXPLICATIO TABULÆ XXXVII.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Capsula matura triquetra a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semen ab externa facie visum.
4. Semen ab interna facie visum.

TAB XXXVIII.

CYANOTIS RACEMOSA.

4. Cyanotis racemosa (?) Hassk Commelynaceæ, p. 125.

Stricta simplex. Folia e basi latiuscula lanceolata, margine læte ciliata, subtus pilosa. Inflorescentia depauperata intra vaginam summi folii nidulans. Bracteæ paucæ ovatæ falcatæ. Semina rugoso-punctata.

Hab. In Sikkim ad 500 ped. alt. : in Khasia ad 250 ped. alt. In planitie Bengaliæ orientalis prope Comillam.

Distributio Indica. Peninsulæ regiones tropicæ (ex Hasskarl.) In Dehra Dhoon Himalayæ boreali-occidentalis.

Vidi specimina viva spontanea sparsa.

I merely judge from Dr. Hasskarl's description of his Cyanotis racemosa that my Bengal specimens belong. I doubt that this may be a small variety of Cyanotis cristata.

The Ceylon specimens of C. P. 3223, issued to the Calcutta Herbarium as Cyanotis lanceolata by Thwaites appear to belong here. They are at all events not Cyanotis lanceolata Wight : but I suspect some error may have occurred by mixture of specimens as these specimens of C. P. 3223 preserved at Calcutta are very small plants : whereas in Ceylon Prodromus, p. 323 this number is to be distinguished from C. fasciculata by its much larger size.

EXPLICATIO TABULÆ XXXVIII.

Planta ex specimine exsiccato Sikkimensi depicta.

N. B.—Ciliæ in marginibus foliorum pictorem effugerunt.

Drawn by Gopal Chandra Das
Govt. School of Art, Calcutta

Litho by Tarak Das Pal, Student,
Govt. School of Art, Calcutta

1 2 3 4 5 6 7 8

TAB. XXXIX.

CYANOTIS NOBILIS.

5. Cyanotis nobilis Hassk. Commelynaceæ p. 148. Cyanotis sp. 17 Hook. f. et Th. in Herb. Cyanotis sp. Griffith, No. 5503. Cyanotis nodiflora C. B. Clarke, in Linn. Journ. XI. p. 453.

Folia lineari-lanceolata. Racemuli scorpioidei, ad nodos dense congesti, sæpius capitula remota quasi-globosa efformantes. Semina rugoso-punctata.

Hab. In Assam : in collibus Khasia ad 500-4000 ped. alt.

Distributio Indica. In Burma.

Vidi specimina viva spontanea numerosa.

This plant extends over a narrow area from Assam to Pegu.

Dr. Hasskarl is in geographical error in stating that Drs. Hooker, Thomson and Griffith collected it in the Peninsula. Cyanotis longifolia of Wight which is adduced by Dr. Hasskarl as a synonym, is a truly Peninsula plant, but it is so exceedingly unlike C. nobilis that it cannot be referred here without a wholesale reduction of species.

I do not see still how this plant differs from the South African Cyanotis nodiflora. There is an additional objection to the name C. nobilis that the present plant is a very scrubby species and by no means has the noble flowers of C. longifolia Wight.

Finally, I still doubt whether it should not be made, with C. barbata and many other species, a variety of C. fasciculata.

In Griffith's specimen No. 5503 most of the capsules have six truncate seeds as usual : but in many capsules there are only three seeds : and I judge from the shape of these seeds that in this case the cells of the ovary were originally 1-ovulate. The parallel case in Forrestia below described leads to the same conclusion and throws grave doubt on the goodness of such species as Commelyna Sikkimensis.

Besides species of Cyanotis already referred to, there are preserved in the Calcutta Herbarium specimens of C. disrumpens, papilionacea, Thomsoni, concanensis (or Stocksii) : for which see Hasskarl's Commelynaceæ. And there are other Indian specimens of Cyanotis not exactly referable to any of these.

All those plants that have the seeds and capsule of Cyanotis barbata, falcate lanceolate bracts and scorpioid racemuli, I should incline to throw into one species whatever the nature of the hairiness or the degree of development of the plants.

Cyanotis vivipara Dalzell is very distinct.

EXPLICATIO TABULÆ XXXIX.

Planta ex specimine exsiccato Khasiano depicta.

1. Capsula matura triquetra a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semina ex unico loculo ejusdem capsulæ in situ ab externa facie visa.
4. Semina eadem ab interna facie visa.
5. Capsula ex specimine Griffithii No. 5503, a latere visa.
6. Capsulæ ejusdem horizontalis sectio.
7. Semen (solitarium) e loculo unico ejusdem capsulæ ab externa facie visa.
8. Semen idem ab interna facie visa.

Note. Since this plate was struck off, I have collected a series of plants of Cyanotis which leaves little doubt in my mind that C. nobilis is only an extreme form of C. barbata.

IX. STREPTOLIRION. Edgeworth in Linn. Trans. XX., p. 90.

Volubile. Stamina 6 perfecta. Paniculæ quasi-terminales ad basin cordato-ovatis bracteis suffultæ. Capsula elliptica acuta trilocularis regulariter trivalvis. Semina in quoque loculo 2 superposita angulosa tuberculoso-rugosa: fere Cyanotidis sed paullo majora.

Drawn by Gopal Chandra Das,
Botanic Garden, Calcutta

Lithd by Chand Lal Das Student,
Govt School of Art, Calcutta.

TAB. XL.

STREPTOLIRION VOLUBILE.

1. **Streptolirion volubile Edgeworth in Linn. Trans. Vol. XX. p. 90. Wight Icones t. 2081.**

Folia longe petiolata late cordato-ovata, acuminata. Bracteæ ad basin ramorum paniculæ corolloideæ albidæ, lanceolatæ, haud vaginantes Petala lineari-oblonga. Semina grosse rugosa.

Hab. A Nepalia ad Bhotan ad 4000-9000 ped. alt. In sylvis madidis communis.

In Khasia boreali ad 4000 ped. alt.

Distributio Indica. In Himalaya boreali-occidentali. In Burma superiore.

Vidi specimina viva spontanea numerosa.

EXPLICATO TABULÆ XL.

Planta ex specimine recenti Sikkimensi depicta.

1. Capsula matura triquetra a latere visa.

2. Flos junior.
3. 4. Sepalum cum stamine.
5. Flos.
6. Petalum cum stamine.

} a Gopal Chundr depicti.

N. B.—Filamenta (revera libera), monoliformibus luteis pilis ornata sunt.

X. FORRESTIA. Kunth Enum. IV., p. 116, (char. emend.)

Stamina 6 perfecta. Corolla fere ad basin 3-partita. Capsula elliptica trilocularis, trivalvis, plus minus irregularis. Semina 3-6, in quoque loculo 2-superimposita aut unicum, arilla rubra penitus involuta. Panicula dense conferta subsessilis, pedunculo axillari vaginam sui folii perforante. Semen et embryo Commelynæ.

From a suggestion thrown out by Dr. Hooker, I examined carefully about 200 capsules of Forrestia Hookeri when I lighted on it growing in quantity. I found nearly 75 per cent. of these capsules to contain five seeds : the capsule, the arrangement and structure of the seeds being exactly as in the 5-seeded species of Commelyna : the capsule however though having one smaller cell was 3-valved. About 4 per cent. of the capsules were 6-seeded, and the remainder were 4-seeded and 3-seeded. On subsequent occasions I have found the proportion of 6-seeded capsules in Forrestia Hookeri much larger : and in Forrestia glabrata the capsules appear very generally 6-seeded.

Drawn by Gopal Chandra Das
Botanic Gardens, Calcutta

Lithography at the Calcutta Students'
Govt. School of Art Calcutta

TAB. XLI.

FORRESTIA HOOKERI.

1. **Forrestia Hookeri.** Hassk. Commelynaceæ, p. 89.

Folia margine villoso-ciliata, subtus glabrata at sæpissime secus venas minute pilosa. Capsula trigona acutissima, ad apicem glabra, quam sepala demum glabrata demum multo longior.

Hab. In convallibus montium frequens ad 500-3000 ped. alt. Sikkim, Assam, Khasia.

Distributio Indica. Extus Bengaliam adhuc ignota.

Erecta 3-8 pedalis simplex aut subsimplex, pedunculis a vertice remotis.

Vaginæ foliorum sæpe lineis dense hirsutis ornatæ. Sepala viridia apice cucullata. Petala albido-rosea. Filamenta pilis monoliformibus barbata. Pollen oblongum sublæve album. Stylus longus stigmate simplici punctiformi.

Vidi specimina viva spontanea.

EXPLICATIO TABULÆ XLI.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Capsula matura intra calycem a latere visa.
2. Capsulæ dehiscentis horizontalis sectio.
3. Semina duo ex unico loculo capsulæ in situ ab externa facie visa.
4. Semen solitarium ex unico loculo capsulæ ab externa facie visum.
5. Semina figuræ 3. ab interiore facie visa.
6. Semen figuræ 4. ab interiore facie visum.
7. Seminis horizontalis sectio.

TAB. XLII.

FORRESTIA GLABRATA.

2. **Forrestia glabrata** Hassk. Commelynaceæ, p. 92. Campelia glabrata Miquel Flor. Ind. III. p. 546. Kunth Enum. IV. p 109.

Folia margine villoso-ciliata, subtus glabrata. Capsula ovoidea, apice pilosa, quam sepala, ad apices hirta, demum multo brevior.

Hab. In convallibus montium frequens ad 500-3000 ped. alt. : Sikkim, Assam, Khasia, Chittagong.

Distributio Indica. In Tenasserim et Malaya.

Vaginæ foliorum aliquando lineis dense hirsutis ornatæ. Sepala juniora elliptica naviculata ; in fructu apicibus elongatis spathulata evadunt.

Vidi specimina viva spontanea.

The hairs at the tips of the sepals elongated in fruit are a good character : and are very long and tawny in some of the Assam specimens.

Forrestia glabrata like the other species varies in size and is sometimes very large, say ten feet high. The stems are generally suberect and undivided.

[Flagellaria is not uncommon in Eastern and Southern Bengal, and is a widely distributed plant extending to Malaya. Flagellaria angustata Wallich which is Flagellaria minor Blume is a smaller plant with smaller leaves found in Penang, Singapore, &c. : but appears to me only a variety of the common species Flagellaria indica.]

EXPLICATIO TABULÆ XLII.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Capsula matura intra sepala a latere visa.
2. Capsula eadem sepalis amotis.
3. Capsulæ dehiscentis horizontalis sectio.
4. Semina ex unico loculo in situ ab externa facie visa.
5. Semina eadem ab interna facie visa.
6. Stamen.
7. Filamenti monoliforme pilum.
8. Pistillum junius cum stylo.

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CYRTANDRACEÆ.

LIST OF THE PLATES.

XLIII. ÆSCHYNANTHUS bracteata α.
XLIV. ÆSCH. „ β Peelii.
XLV. ÆSCH. acuminata.
XLVI. ÆSCH. superba.
XLVII. ÆSCH. parviflora.
XLVIII. ÆSCH. { gracilis. / Andersoni.
XLIX. ÆSCH. parasitica.
L. ÆSCH. ramosissima.
LI. DICHROTRICHUM Griffithii.
LII. LYSIONOTUS ternifolia.
LIII. DIDYMOCARPUS Punduana.
LIV. D. Hookeri.
LV. D. subalternans.
LVI. D. oblonga.
LVII. D. aromatica.
LVIII. D. acuminata.
LVIX. D. villosa.
LX. D. aurantiaca.
LXI. D. obtusa.
LXII. D. Andersoni.
LXIII. D. macrophylla.
LXIV. D. pedicellata.
LXV. D. Mortoni.
LXVI. D. Kurzii.
LXVII. D. lanuginosa.
LXVIII. CHAMPIONIA multiflora.
LXIX. CHIRITA urticæfolia.
LXX. CH. Hookeri.
LXXI. CH. macrophylla.
LXXII. CH. polyneura.
LXXIII. CH. glabra.
LXXIV. CH. pumila.
LXXV. CH. polyneura α Thomsoni.
LXXVI. CH. „ β amabilis.
LXXVII. CH. bifolia.
LXXVIII. CH. hamosa.
LXXIX. CH. speciosa α.
LXXX. CH. „ β.
LXXXI. CH. acuminata.
LXXXII. CH. primulacea.
LXXXIII. BŒA flocculosa.
LXXXIV. B. amplexicaulis.
LXXXV. BŒICA fulva.
LXXXVI. B. Griffithii.
LXXXVII. B. filiformis.
LXXXVII. *bis*.
LXXXVIII. RHYNCOGLOSSUM obliquum.
LXXXIX. STAURANTHERA umbrosa.
LXXXIX. *bis*. ST. grandifolia.
XC. EPITHEMA carnosum.
XCI. RHYNCOTECHUM ellipticum.
XCII. RH. vestitum.
XCIII. RH. latifolium.

CYRTANDRACEÆ.

Among the bilabiate monopetals having a superior ovary with very many ovules the order Cyrtandraceæ is generally well distinguished by the one-celled ovary with two carpels : the edges of the carpellary leaves being turned in a long way so as (in the typical genera) to nearly meet the opposite pair and then to be recurved round. Vid. Tab XLIV. fig. 3, Tab LI. fig. 5, Tab LXXXVIII. fig. 5, Tab XCI. fig. 5. In several genera the corolla is not bilabiate but the irregularity of five corolla segments with four stamens is presented. The edges of the carpellary leaves are however in some genera not turned in so far as in the pictures just quoted and there then remains only an arbitrary line between the Cyrtandraceæ and Orobanchaceæ. In Orobanche itself the placental double lines are turned in a little way and diverge. The distinction then stands that in Cyrtandraceæ the albumen is none or small, in Orobanchaceæ abundant. But the seeds in both orders are so minute that this character is exceedingly troublesome to work with, and sometimes the albumen present in Cyrtandraceæ appears to me not to be very small in quantity. Christisonia of Wight (formerly Phelipœa) has been removed by some from Orobanchaceæ to Cyrtandraceæ. I have omitted it on the ground that the best distinction remaining between the two orders lies in the parasitism of Orobanchaceæ. I should indeed prefer to throw the two orders together.

The books to which reference is made are :

(1.) Roxburgh's Flora Indica, Carey's Edition.

(2.) Roxburgh's Coromandel Plants.

(3.) Wallich's Plantæ Asiaticæ rariores.

(4.) Horsfield, Plantæ Javanicæ.

(5.) Wight, Icones Plantarum.

(6.) De Candolle, Prodromus Vol. IX.

(7.) Miquel, Flora Indiæ Bataviæ Vol. II.

(8.) Bentham, Flora of Hongkong.

(9.) Hooker's Illustrations of Himalayan Plants.

And I have reduced my work to the standard of De Candolle Prodromus Vol. IX.

GENERA ET SPECIES CYRTANDRACEARUM INFRA DESCRIPTÆ.

Tribus I. **TRICHOSPOREÆ.** Capsula siliquæformis. Semina utrinque pilifera.

I. ÆSCHYNANTHUS. Stamina fertilia 4. Stigma integrum.

1. Æschynanthus bracteata.
2. Æ. acuminata.
3. Æ. superba.
4. Æ. parviflora.
5. Æ. gracilis.
6. Æ. Andersoni.
7. Æ. parasitica.
8. Æ. ramosissima.

II. DICHROTRICHUM. Stamina fertilia 4. Stigma unilaterale bifidum.

1. Dichrotrichum Griffithii.

III. LYSIONOTUS. Stamina fertilia 2.

1. Lysionotus ternifolia.

Tribus II. **DIDYMOCARPEÆ.** Capsula siliquæformis. Semina haud pilifera.

IV. DIDYMOCARPUS. Corolla elongata. Stigma fere integrum. Capsula bivalvis, valvis haud contortis.

1. Didymocarpus punduana.
2. D. Hookeri.
3. D. subalternans.
4. D. oblonga.
5. D. aromatica.
6. D. acuminata.
7. D. villosa.
8. D. aurantiaca.
9. D. obtusa.
10. D. Andersoni.
11. D. macrophylla.
12. D. pedicellata.
13. D. Mortoni.
14. D. Kurzii.
15. D. lanuginosa.

V. CHAMPIONIA. Corolla abbreviata. Stigma fere integrum. Capsula bivalvis septicida, valvis haud contortis.

1. Championia multiflora.

VI. CHIRITA. Corolla elongata. Stigma unilaterale bifidum. Capsula bivalvis, valvis haud contortis.

1. Chirita urticæfolia.
2. Ch. Hookeri.
3. Ch. macrophylla.
4. Ch. glabra.
5. Ch. pumila.
6. Ch. polyneura.
7. Ch. bifolia.
8. Ch. hamosa.
9. Ch. speciosa.
10. Ch. acuminata.
11. Ch. primulacea.

VII. BÆA. Capsula bivalvis, valvis demum spiraliter tortis.

1. Bæa flocculosa.
2. B. amplexicaulis.

VIII. BÆICA. Capsula quadrivalvis. Folia alterna.

1. Bæica fulva.
2. B. Griffithii.
3. B. filiformis.

Tribus III. **RAMONDIÆ.** Capsula ovoidea, longitudinaliter dehiscens.

IX. RHYNCOGLOSSUM. Stamina 2 fertilia.

1. Rhyncoglossum obliquum.

Tribus IV. **EPITHEMEÆ.** Capsula ovoidea circumscissa.

X. STAURANTHERA. Calyx plicatus. Stamina 4 fertilia.

1. Stauranthera umbrosa.
2. St. grandifolia.

XI. EPITHEMA. Calyx haud plicatus. Stamina 2 fertilia.

1. Epithema carnosum.

Tribus V. **EUCYRTANDREÆ.** Bacca pulposa.

XII. RHYNCOTECHUM. Stamina 4 fertilia. Bacca globosa.

1. Rhyncotechum ellipticum.
2. Rh. vestitum.
3. Rh. latifolium.

I. ÆSCHYNANTHUS DC. IX., p. 260.

Stamina 4 antherifera. Stigma integrum depresso-concavum. Capsula siliquæformis septicide dehiscens demum 4-valvis. Semina utrinque pilifera, pilo inferiore unico, superiore unico aut duplici pluribusve. Suffrutices epiphyti. Folia opposita æqualia carnosa.

Sect 1.—Semen superne unicum pilum gerens.

Sect 2.—Semen superne duo pila gerens.

Sect 3.—Semen superne ?-plura pila gerens [In Bengalia adest exemplum nullum.]

The hairs on the seeds give better characters for the prime subdivision of this genus than the inflorescence. The long-stalked umbel may sometimes be reduced so as to appear 2-flowered only. The corymb of repeated bifurcations may be depauperated to the same form, and even to 1-flowered axillary peduncles. The short-stalked umbel may be subsessile, and finally may be resolved into fascicled 1-flowered peduncles.

The depth to which the calyx is divided varies considerably in the same plant and even in the same flower during the progress of flowering.

The degree of exsertion of the style is a character of no importance: the style is at first included but as soon as impregnated elongates with great rapidity. The anthers are generally exserted. In nearly all the species the filaments and the style are glanduloso-pilose.

Species infra descriptæ.

Sect I.

1. Æschynanthus bracteata.
2. Æ. acuminata.
3. Æ. superba.
4. Æ. parviflora.
5. Æ. gracilis.
6. Æ. Andersoni.

Sect II.

7. Æ. parasitica.
8. Æ. ramosissima.

TAB XLIII.

ÆSCHYNANTHUS BRACTEATA α genuina.

1. Æschynanthus bracteata. Wallich No. 794.

Glabra nisi corolla. Folia elliptica aut oblonga, aliquando fere rotunda, acuminata aut acuta. Pedunculi ex axillis superioribus orti 2-pluri-flori, aliquando ramosi corymbum efformantes. Bracteæ coccineæ ovato-lanceolatæ pedicellos superantes. Calyx fere ad basin partitus coccineus segmentis anguste lanceolatis semper erectis. Corolla coccinea c. 1½ unciam longa. Semen valde papilloso-scabrum, pilis fere lævibus.

α. **genuina Dc. IX. p. 261. Miquel Flor. Ind. II. p. 718. Pedunculi breviusculi pluri-(rarius 2-1-) flori, haud raro divisi corymbum efformantes.**

Hab. In collibus Khasia eorumque radicibus intra provincias Assam et Sylhet inclusis ad 1000-4000 ped alt.

Distributio Indica. In Birma.

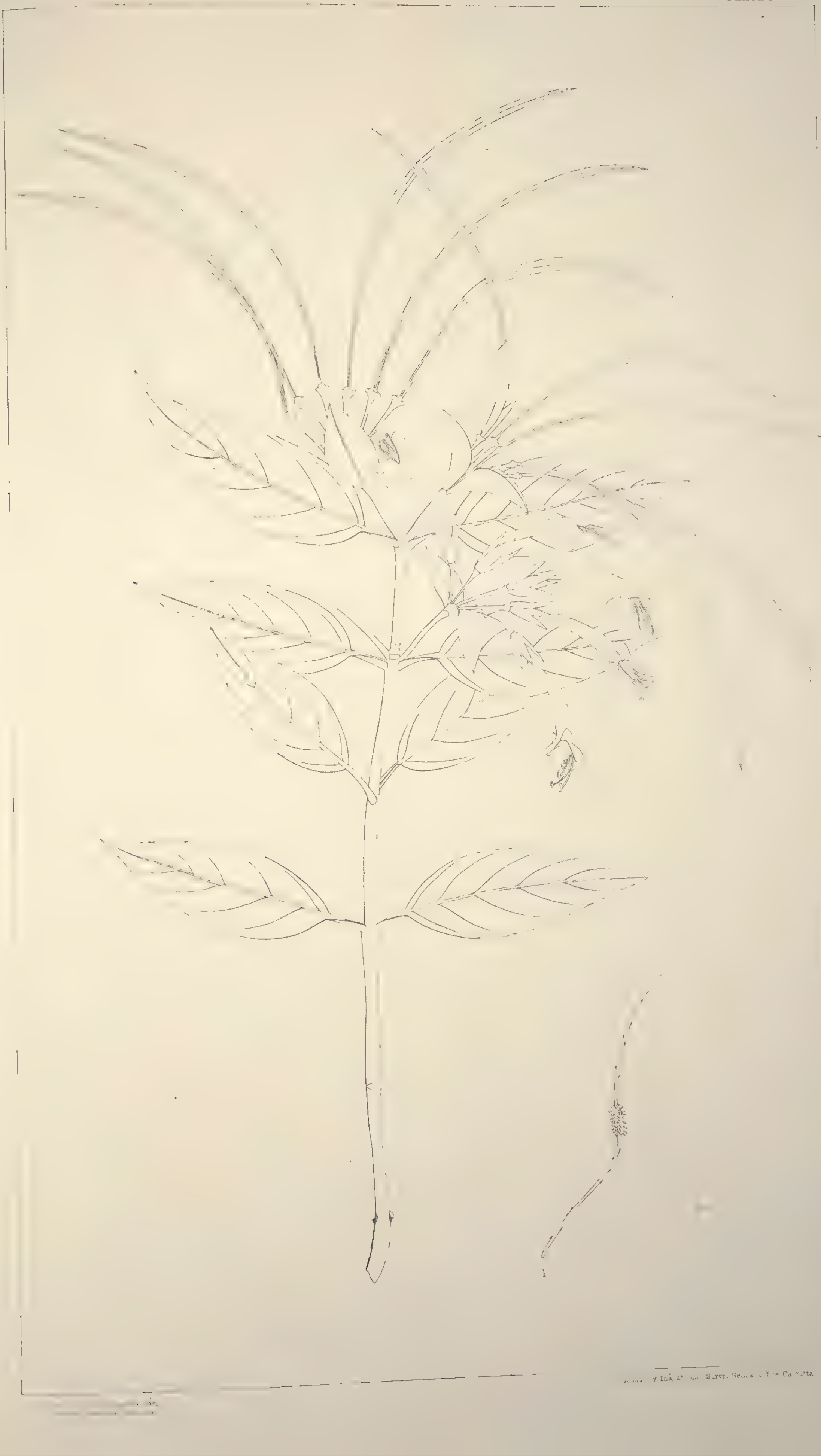
Vidi specimina viva spontanea.

Folia basi subacuta vel rotundata.

EXPLICATIO TABULÆ XLIII.

Planta ex specimine exsiccato Khasiano depicta.

1. Semen valde auctum, pilis nitido-albis.



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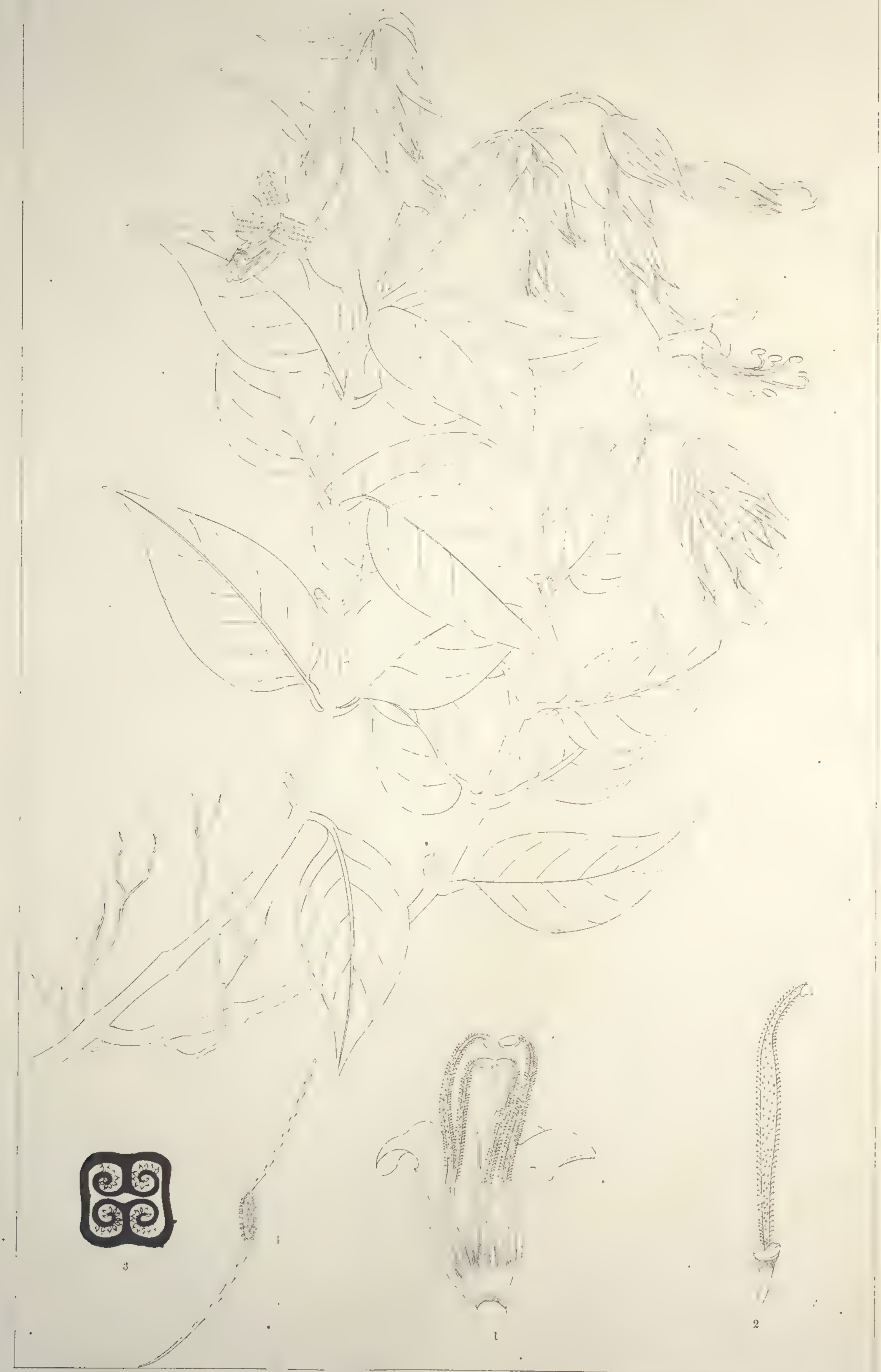

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Drawn by Gopal Chandra Das
Botanic Gardens Calcutta

Litho by Calcutta Nat. Surv. Genl's Office, Calcutta

TAB XLIV.

ÆSCHYNANTHUS BRACTEATA β Peelii.

β. **Peelii Hook. f. et Th. in Hooker Illustrations of Himalayan plants, t. XVII. Pedunculi longiores 1-2- (rarius 3-) flori, perraro divisi.**

Hab. In montibus Himalaya in provinciis Sikkim et Bhotan ad 4,000-8,000 ped. alt.

Distributio Indica. In Nepalia.

Wallich doubtless estimated this as a geographical variety of his Æschynanthus bracteata and as such at least it seems good. I have collected a specimen at Darjeeling, the peduncles very long and 3-4 flowered, the leaves nearly orbicular. The Khasia specimens of Hook. f. et Th. issued as Æsch. Peelii I consider (from the short peduncles) to be rather bracteata α.

EXPLICATIO TABULÆ XLIV

Planta ex tabula XVII Hookeri (Illustrations of Himalayan plants) exscripta.

1. Flos ex tabula eadem exscripta.
2. Discus et pistillum.
3. Ovarii junioris horizontalis sectio.
4. Semen valde auctum, pilis nitido-albis.

TAB. XLV.

ÆSCHYNANTHUS ACUMINATA.

2. Æschynanthus acuminata Wallich No. 6397. Dc. IX. p. 263. Æsch. chinensis Gard. et Champ. Walp. Ann. III. p. 95, (ex descript.)

Glabra. Folia ovata aut elliptica acuminata Pedunculi ex axillis superioribus orti, simplices 1-2-flori, aut ramosi bracteati corymbum efformantes; fructus tempore recurvati. Bracteæ virides late ovatæ acutæ pedicellis breviores. Calyx viridis, semi-5-fidus, demum altius divisus, segmentis rotundo-oblongis mox reflexis. Corolla luride viridi-lutea vix unciam longa. Semen cum pilis fere læve.

Hab. Sikkim, Assam, Khasia ad ripas fluminum ad 2,000-4,000 ped. alt.

Folia quam in Æsch. bracteata minus carnosa, venulis magis conspicuis. Filamenta parum glanduloso-pilosa, ovarium fere glabrum. Species a cl. Bentham (in Flora Hongkong p. 258) ad Æsch. bracteatam reducta. Viva longissime differt: sed in herbario bracteæ calycesque coccineæ fuisse falso videntur. Æschynantho bracteata multo serius (nempe mensibus Oct. Dec.) floret.

Vidi specimina viva spontanea numerosa.

Rami sæpius simplices ad 6-8 ped. longi penduli : pedunculi e supremis vel penultimis axillis orti.

EXPLICATIO TABULÆ XLV.

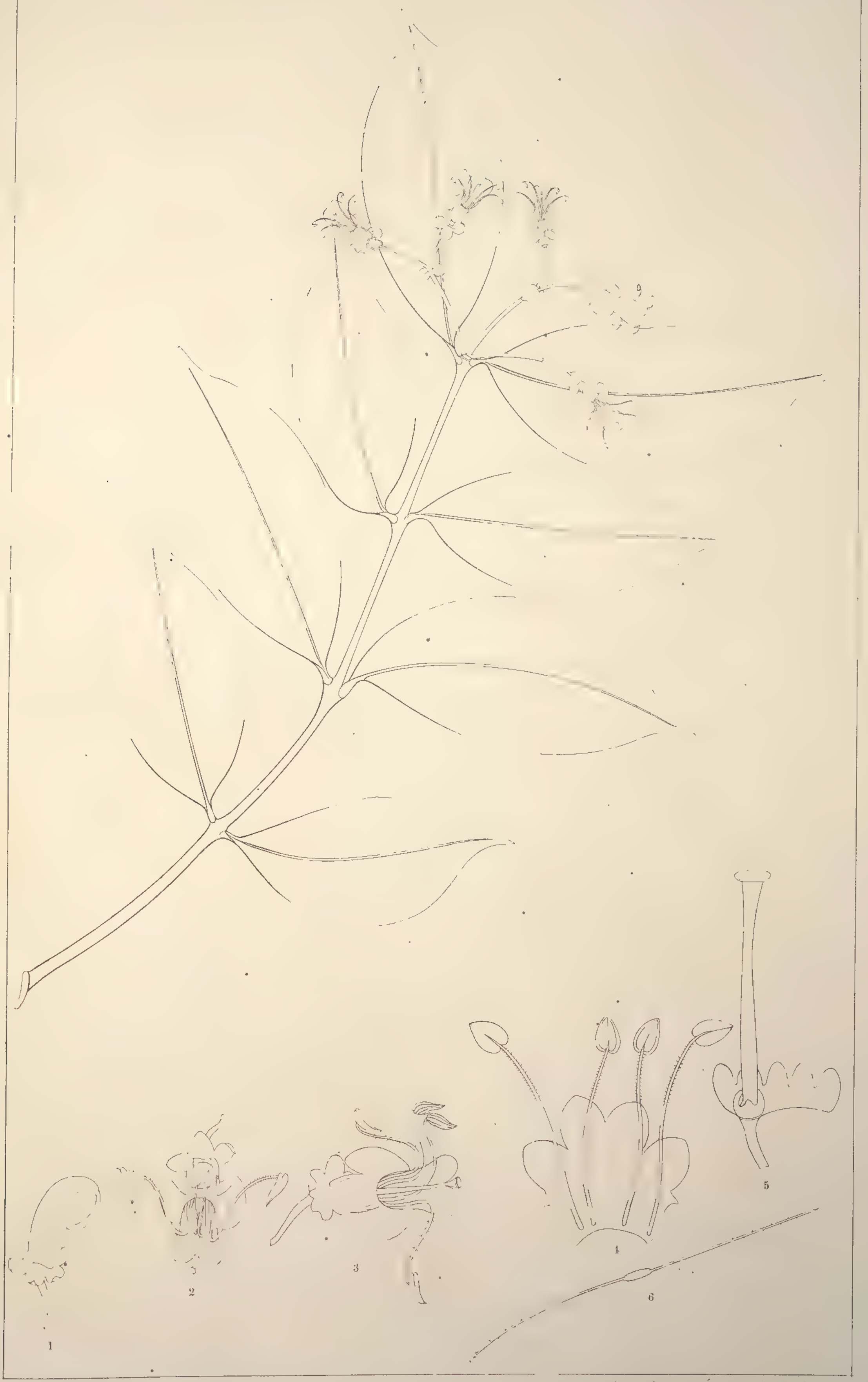
Planta ex specimine recente Sikkimensi depicta.

1, 2, 3, Flos recens a Gopal Chandra depictus.

4. Corolla uno latere fissa.

5. Discus et pistillum, calyce fisso, corolla amota.

6. Semen valde auctum.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Lithd. by Abdool Majid, Survr. Genl's. Office, Calcutta.

TAB XLVI.

ÆSCHYNANTHUS SUPERBA.

3. Æschynanthus superba i. e. Æsch. longiflora Wallich, No. 795 nec Æ. longiflora DC Prodr. IX. 262 nec Lysionotus longiflora Blume.

Glabra. Folia elliptico-oblonga acuminata. Pedunculi solitarii (aut semel furcati) apice plures pedicellos umbellatim dispositos gerentes : ex axillis superioribus orti, sæpe in abbreviatis ramulis quasi-laterales. Bracteæ coccineæ elliptico-oblongæ. Calyx coccineus ad basin partitus segmentis oblongis erectis. Corolla coccinea 2-3½ uncias longa. Semen cum pilis fere læve.

Hab. In Assam et Khasia ad 1000-4000 ped. alt.

Vidi specimina viva spontanea.

Rami diffusi ad 10-20 ped. longi : folia 3-6 uncias longa : capsulæ ad 12-18 uncias longæ.

Wallich's species No. 795 (inter multas pulchras pulcherrima) was issued as Æschynanthus longiflora, and has been repeatedly quoted in print under that name but never described. In the meanwhile the name Æschynanthus longiflora has been fixed by publication with sufficient descriptions to a very different Javan species.

I have therefore invented a new name for the Wallichian No. 795.

EXPLICATIO TABULÆ XLVI

Planta ex specimine exsiccato Khasiano depicta.

1. Stamina.

2. Discus et pistillum.

3. Semen valde auctum, pilis vix argenteis.

TAB XLVII.

ÆSCHYNANTHUS PARVIFLORA.

4. Æschynanthus parviflora DC IX. p. 261.

Glabra. Folia elliptica acuminata. Pedunculi simplices 1-flori in axillis superioribus fasciculati quasi umbellam sessilem efformantes. Calyx viridis ad basin partitus, segmentis anguste lanceolatis c. ¼ unciam longis. Corolla (ex Wallich) triplo quam Æsch. grandifloræ minor. Semen minute scabrum, pilis valde longis parum scabris.

Hab. In convallibus Himalayæ, provinciæ Sikkim ad 1000-2000 ped. alt.

Distributio Indica. In montibus Nepaliæ inferioris (ex Wallich).

Vidi specimina viva spontanea.

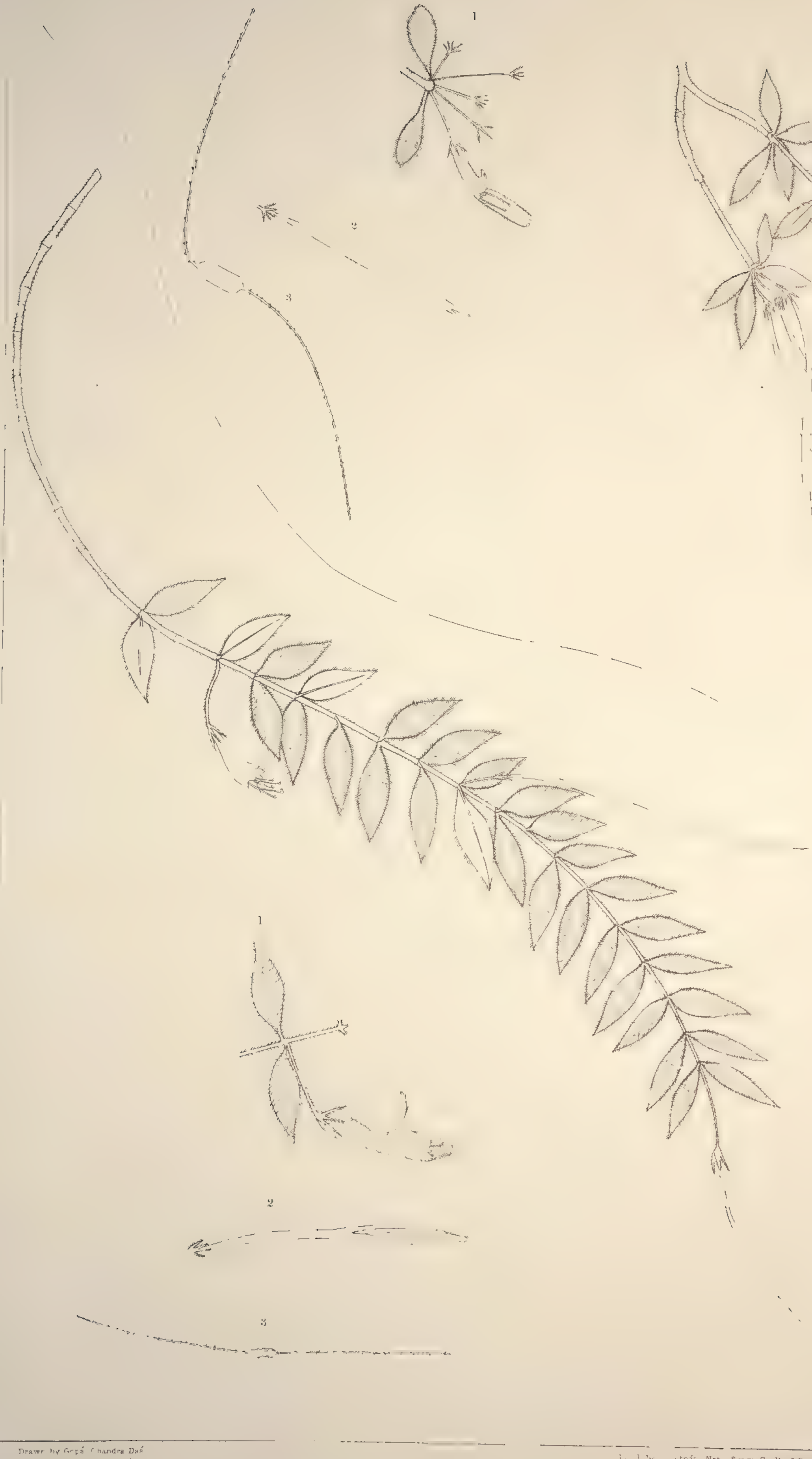
The flowering specimens marked Æschynanthus parviflora in the Calcutta Herbarium I believe to be Æsch. parasitica.

EXPLICATIO TABULÆ XLVII.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Semen valde auctum, pilis vix argenteis.

Lith. by Tappan, Gill & Smith, Boston, from the Ms. Collection



Drawn by Gopá Chandra Dás

Lith. by [illegible] Natl. Surv. Geol's Office, Calcutta

TAB XLVIII. A.

ÆSCHYNANTHUS GRACILIS.

5. Æschynanthus gracilis. Parish in litteris.

Scandens, aut potius secus ramos arborum repens. Rami juniores, pedunculi, calyces, et corolla extus, pilosi. Folia late lanceolata, pilosa; aliquando demum glabrata; 1-1½ unciam longa. Pedunculi solitarii axillares terminalesque 1-flori c. unciam longi. Calyx ad basin partitus segmentis linearibus vix ¼ unciam longis. Corolla aurantiaco-coccinea c. unciam longa Semen cum pilis parce papilloso-scabrum.

Hab. Sikkim, Assam, Khasia, in convallibus montium subtropicis ad 500-2000 ped. alt

Distributio Indica. Burma inferior (ex Revd.——Parish)

Vidi specimina viva spontanea.

Calyce alte partito ab Æschynantho radicante Jack differt.

EXPLICATIO TABULÆ XLVIII. A.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Fragmentum caulis cum flore paullo auctum. : *N. B.* quoad labium floris sculptor omnino errat.
2. Capsula dehiscens.
3. Semen valde auctum.

TAB XLVIII. B.

ÆSCHYNANTHUS ANDERSONI.

6. Æschynanthus Andersoni nov. sp.

Rami breves fere recti. Ramuli juniores, pedunculi, calyces, et corolla extus, pilosi. Folia anguste obovata aut elliptica, vix acuta, molliter tomentoso-villosa 1-1½ unciam longa sub-verticillata. Pedunculi 1-flori ad apices ramorum fasciculati. Calyx ad basin partitus, segmentis linearibus acutis c. ¼ unciam longis. Corolla coccinea ¾ unciam longa. Semen læve pro genere magnum, pilis papilloso-scabris.

Hab. Ad Yunan Burmæ superioris qua detexit Dr. Johannes Anderson Musei Indici imperialis præses.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ XLVIII. B.

Planta ex specimine exsiccato Doctoris Andersoni depicta.

1. Fragmentum caulis cum floribus vix auctum.
2. Capsula semi-matura.
3. Semen valde auctum.

TAB XLIX.

ÆSCHYNANTHUS PARASITICA.

7. Æschynanthus parasitica i. e. Incarvillea parasitica Roxb. Flor. Ind. III p. 112, et Coromandel Plants t. 291. inclus. Æsch. grandiflora Don. DC IX. p. 260 partim.

Glabra nisi corolla. Folia anguste lanceolata vel elliptico-lanceolata, elongato-acuminata. Pedicelli 1-flori fasciculati, quasi umbellam terminalem efformantes. Bractea ad basin cujusque pedicelli, eoque multum brevior. lanceolata coccinea. Calyx coccineus tubulosus parum divisus. lobis oblongis obtusis. Corolla extus pilosa ¾-1½ unciam longa aurantiaco-rubra lobis aurantiacis medio nigro-maculatis. Semen rugoso-scabrum pilis longissimis scabridis.

Hab. In convallibus Himalayæ ad 2000-8000 ped. alt., provinciæ Sikkim. In collibus Garrow Bengaliæ orientalis ex Roxb. sed nullum specimen ex Bengalia orientali mihi unquam obvium.

Distributio Indica. In Nepal.

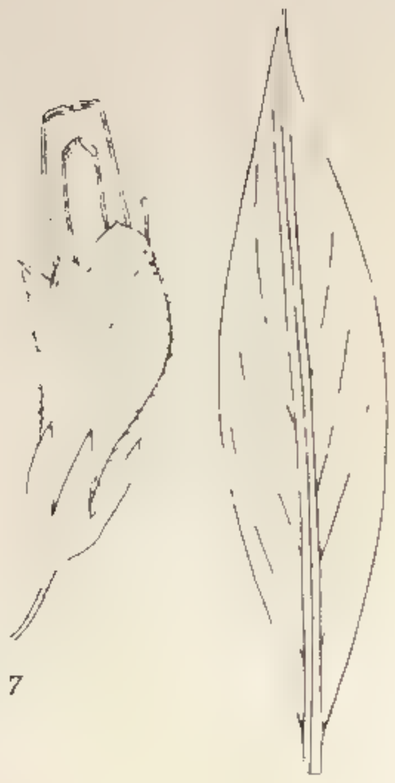
Calyx aliquando glanduloso-pilosus. Pedicelli ad apicem rami undique circumfusi falsam umbellam efformant. Inflorescentia raro lateralis. Corolla quoad magnitudinem sat variabilis.

In Roxb. Coromandel Plants t. 291 corolla magna Æsch. grandifloræ et calycis tubus nimis abbreviatus, lobi nimis acutati, videntur. Species nisi lobis calycis abbreviatis nequaquam ab Æsch. ramosissima distinguenda.

Vidi specimina viva spontanea.

EXPLICATIO TABULÆ XLIX.

Planta ex specimine exsiccato Sikkimensi depicta.



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TAB L.

ÆSCHYNANTHUS RAMOSISSIMA.

8. Æschynanthus ramosissima Wallich No. 796. et Plantæ Asiaticæ rariores t. 71. DC IX. p. 361.

Glabra nisi corolla. Folia anguste lanceolata oblongo-lanceolata aut elliptica acuminata. Pedicelli 1-flori fasciculati, quasi umbellam terminalem efformantes Bractea ad basin cujusque pedicelli, eoque multo brevior, lanceolata coccinea. Calyx coccineus campanulatus altius (aliquando fere ad basin) divisus segmentis lanceolatis acutis. Corolla extus pilosa ¾-1 unciam longa aurantiaco-rubra lobis aurantiacis medio nigro-maculatis. Semen rugoso-scabrum pilis longissimis scabridis

Hab. In convallibus Himalayæ ad 2000-8000 ped. alt ,provinciarum Sikkim et Bhotan. In Assam et Khasia ad 500-4000 ped. alt.

Distributio Indica. In Nepalia. In Burma. In insulis Andaman.

Inflorescentia et semina Æsch. parasiticæ. Calyx aliquando glanduloso-pilosus. Corollæ vulgo angustiores quam Æsch. parasiticæ : sed species Æ. ramosissima ex unico charactere calycis instituta mihi dubia remanet.

Specimina sub nomine Æsch. maculatæ Lindl. ex horto Kewensi dimissa mihi omnino Æsch. ramosissima videntur. Præterea Æ. maculata Lindl. t. 28 in Bot. Register 1841 a me Æsch. ramosissima numeratur.

Vidi specimina viva spontanea numerosa.

EXPLICATIO TABULÆ L.

Planta ex tabula Wallichii t. 71 exscripta.

1. Flos ex eadem tabula.
2. Discus et pistillum, calyce fisso, corolla amota, ex eadem tabula.
3. Corolla fissa ex eadem tabula exscripta.
4. Antheræ duorum staminum ex eadem tabula.
5. Antheræ unici staminis a tergo ex eadem tabula.
6. Stigma ex eadem tabula.
7. Flos ex specimine Khasiano depicta.
8. Folium.
9. Semen valde auctum, pilis sordidis.
10. Fragmentum pili, ex eadem semine abscissi, validissime auctum.

II. DICHROTRICHUM Miq. Flor. Ind. II., p. 715.

Stamina 4 antherifera. Stigma unilaterale bifidum. Capsula siliquæformis loculicide dehiscens demum quasi 4-valvis. Semina utrinque pilo unico munita. Suffrutices. Folia opposita inæqualia haud carnosa.

I have not recognised here the tribe Lysionoteæ of DC as separate from that of the Æschynantheæ. The distinction between them is that in the Lysionoteæ the seed is attached by the lower hair, in Æschynantheæ the seed is attached by its lower end and all the hairs are free. This distinction is founded by no less an authority than R. Brown ; but as far as I can make out, the seeds in Æschynanthus are attached by the lower hair. The distinction is at all events a minute one and troublesome to work with : and I have omitted it as the Indian Lysionoteæ are sufficiently separated from Æschynanthus by easier characters.

I have altered also the definition of Dichrotrichum by omitting the very character on which its name is given, viz., the different color of the two hairs at the two ends of the seeds. This can by itself hardly be thought of generic value and in the Bengal species the two hairs are concolorous.

Mr. Kurz however considers that the species placed here by me (*viz.*, the old Chirita Griffithii) is too remote by its habit to be placed in Dichrotrichum : but the alternative is between placing it here for the present or inventing a new genus especially for it. Liebigia bracteosa Zollinger probably belongs to the same genus.

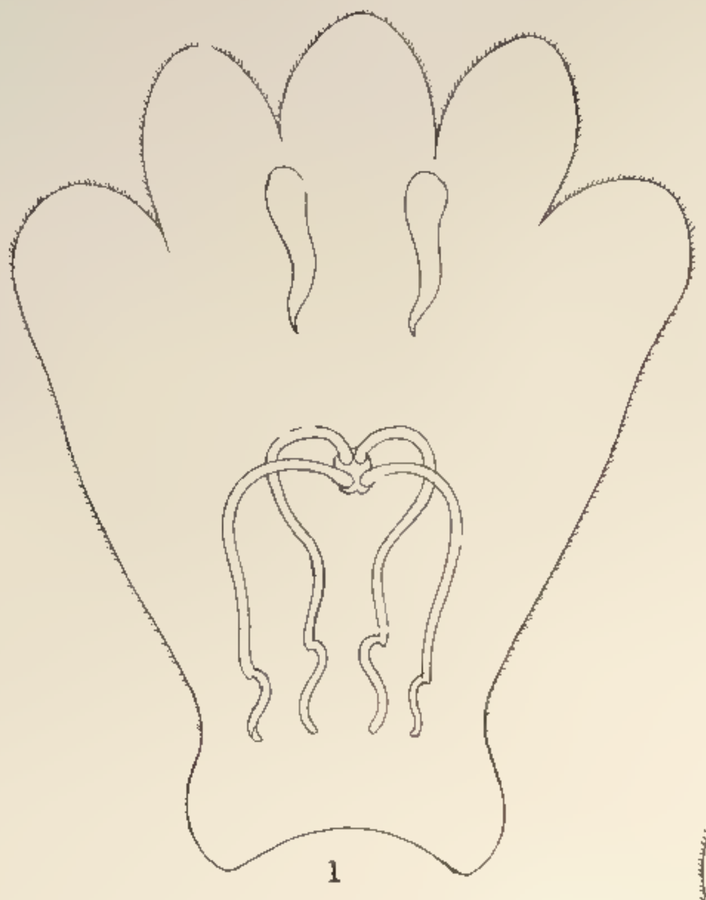

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Photo-Litho Calcutta Gov. Art Press,
Printed at the Superintendent,
Govt. Stationery Office, Calcutta.

TAB LI.

DICHROTRICHUM GRIFFITHII.

1. Dichrotrichum Griffithii i. e. Chirita Griffithii Hook. f et Th. in Herb.

Suffrutescens setoso-pilosa. Folia petiolata secunda elliptico-lanceolata crenulata, supra scabrida, subtus pilosa. Pedunculi dichotomo cymosi. Bracteæ lanceolatæ glanduloso-serratæ. Calyx viridis ad basin partitus segmentis lanceolatis glanduloso-serratis. Corolla extus pilosa, inferne inflata, lutea brunneo-maculata, fauce duobus lineis elevatis corrugata. Stamina didynama cum rudimento quinti. Stylus glanduloso-pilosus. Ovarium glabrum basi cyathula sub-5-fida cinctum. Semen cum pilis læve.

Hab. In convallibus Himalayæ, provinciæ Sikkim ad 3000-6000 ped. alt. In Assam et Khasia ad 1000-4000 ped. alt.

Ménsibùs Oct. Nov. (quam aliæ Cyrtandracearum species serius) floret. Quinti staminis rudimentum aliquando monstrosum evolutum.

Vidi specimina viva spontanea numerosa.

All the Himalayan specimens are (as observed in so many other cases) consentaneously unlike the Khasia specimens, and there result two Geographical varieties. The leaves of the Himalayan specimens when dried are very black above, white-green beneath: the dried leaves of the Khasia specimens are a rich-brown above and yellow-brown beneath.

The ridges on the lower lip of the corolla of this plant bring it into close affinity with Lysionotus.

EXPLICATIO TABULÆ LI.

Planta ex specimine recenti Sikkimensi depicta.

1. Corolla fissa a Gopal Chandra depicta.
2. Stamina.
3. Discus et pistillum. Stylus a facie visus.
4. Discus et pistillum. Stylus a latere visus.
5. Ovarium junioris horizontalis sectio.
6. Semen valde auctum.

III. LYSIONOTUS DC IX., p. 263.

Stamina 2 antherifera. Stigma sub-integrum depresso-concavum. Capsula siliquæformis loculicide dehiscens demum 4-valvis. Semina utrinque pilo unico munita. Herba erecta perennis in saxis vel arboribus vigens. Folia terno-verticillata aut opposita.

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Lithography by Gopal Lal Das, Student,
Government School of Art, Calcutta

TAB LII.

LYSIONOTUS TERNIFOLIA.

I. Lysionotus ternifolia DC IX. p. 264 cum synon. Miquel Flor. Ind. II. p. 723. Chirita sp. 18 Hook. f. et Th. in Herb. Calosacme polycarpa Wall. No. 804.

Glabra. Folia oblonga, utrinque acuminata, serrata, sæpe terno-verticillata. Pedunculi cymoso-paniculati. Bracteæ virides ovato-lanceolatæ. Calyx viridis alte divisus segmentis lanceolatis. Corolla cærulea aut purpurea, fauce duobus luteis elevatis lineis corrugata. Filamenta fertilia prope apicem processu calciformi aucta. Filamenta sterilia 3. Ovarium glabrum basi cyathula 5-fida cinctum. Semen cum pilis læve.

Hab. In montibus Himalayæ, provinciæ Sikkim ad 1000-7000 ped. alt. In Bhotan, Assam, Khasia ; sat communis.

Distributio Indica. In Nepalia et Himalaya boreali-occidentali. In Burma.

Vidi specimina viva spontanea numerosa.

The depth to which the calyx is divided is variable.

This plant like many others which have a wide range in altitude upon the Himalaya has a high-level form and a low-level form so distinct in habit that the gardeners near Darjeeling believe them two species, and there are traces in the Calcutta Herbarium of several attempts to subdivide this species.

The low-level plants have the corolla whitish-lilac with an elongated tube and a very loose panicle : the high-level plants have the corolla dark violet-purple with a shorter tube, and the flowers almost fasciculate towards the ends of the panicle branches. There is a zone of country between the high-level and low-level forms from which the plant is generally absent. This is the case with some 50 Sikkim plants which have a high-level and a low-level form separated by a barren area, *viz.*, the region of cultivation. The Lepchas like to live entirely between 2000 and 5000 feet elevation in outer Sikkim. Up to 2000 feet the dry Sal Forest extends : above 5000 feet comes in the giant dripping forest. In the region of cultivation between, many plants are wanting though found plentifully both above and below it. As another striking example I may mention the fern Angiopteris evecta which grows a gigantic size in the upper wet forest, but has quite a different aspect in the lower forest and is considered by the Lepchas (as well as by some botanists) a different species altogether.

EXPLICATIO TABULÆ LII.

Planta ex specimine recente Sikkimensi depicta.

1. Discus et pistillum, calyce fisso.
2. Stamen alterum a facie visum.
3. Stamen alterum a latere visum.
4. Capsulæ dehiscentis horizontalis sectio.
5. Semen valde auctum.
6. Corolla e tabula 118 Wallichii exscripta.

IV. DIDYMOCARPUS DC IX., p. 265.

Corollæ tubus elongatus in media parte angustus. Stigma integrum orbiculatum at plus minus unilaterale vel-apice subreniforme. Discus hypogynus quasi cyathula obliqua. Capsula loculicide bivalvis, valvis haud contortis. Pedunculi axillares dichotomo-cymosi. Folia opposita vel alterna.

Species infra descriptæ.

Sect I. Stamina fertilia 2.

* Subsect. (a.) Calyx 5-fidus i e. ad dimidiam partem (vix altius) divisus.

1. Didymocarpus punduana.
2. D. Hookerii.
3. D. sub-alternans.
4. D. oblonga.
5. D. aromatica.
6. D. acuminata.
7. D. villosa.
8. D. aurantiaca.
9 D. obtusa.
10. D. Andersoni.
11. D. macrophylla.
12. D. pedicellata.

** Subsect. (b.) Calyx fere ad basin 5-partitus.

13. D. Mortoni.
14. D. Kurzii.

Sect II. Stamina fertilia 4.

15. D. lanuginosa.

Series specierum subsectionis (a.) extricatu difficilimarum a caulescentibus ad acaulescentes procedit.

Series A. Caulis elongatus, in media parte folia opposita aut sæpe quasi-verticillata gerens Antheræ pilis albidis ornatæ. Capsula longiuscula.

1. D. punduana. 2. D. Hookeri. 3. D. subalternans.

Series B. Caulis mediocris ad apicem folia opposita decussata et falso verticillata gerens. Calyx glaber aut fere glabratus parum divisus. Capsula breviuscula.

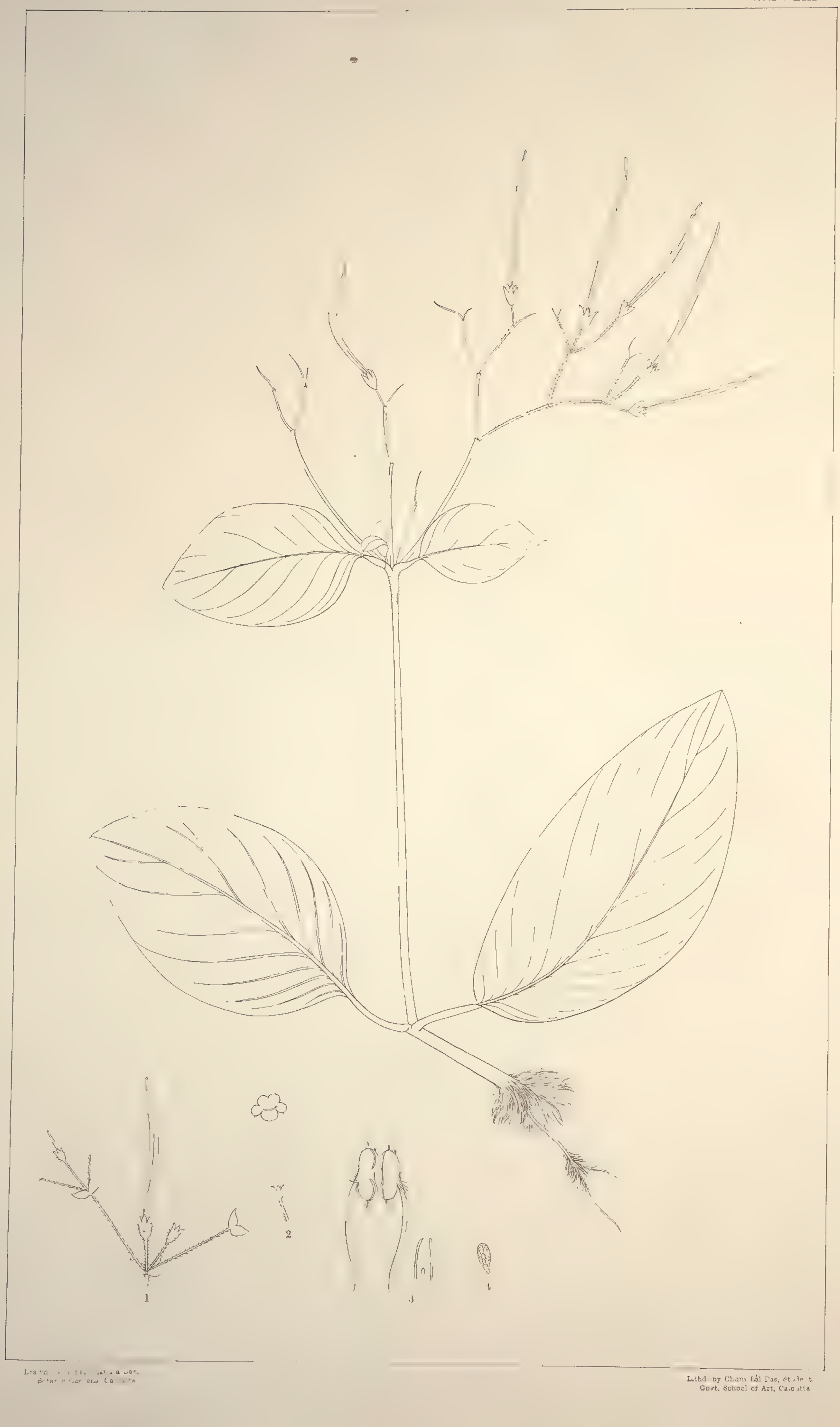
4. D. oblonga. 5. D. aromatica.

Series C. Caulis mediocris vel brevis. Folia opposita, nec ad apicem caulis approximata. Aut calyx glaber altius divisus aut capsula longiuscula.

6. D. acuminata. 7. D. villosa. 8. D. aurantiaca.
9. D. obtusa. 10. D. Andersoni.

Series D. Subacaules.

11. D. macrophylla. 12. D. pedicellata.



Drawn & lith. by Lal a Das,
Botanical Gardens Calcutta

Lithd by Cham Lál Das, Student
Govt. School of Art, Calcutta

TAB LIII.

DIDYMOCARPUS PUNDUANA.

1. Didymocarpus punduana, DC IX. p. 267.

Caulis farinoso-puberulus in media parte folia terno-verticillata aut opposita gerens. Folia petiolata oblonga, leviter crenulata aut fere integra, supra minute pilosa aut villosa, subtus demum glabrata. Pedicelli sparsim glanduloso-pilosi, bracteas ovatas longe superantes. Calyx ad tertiam partem divisus segmentis oblongis, glabratus rarius minute glandulosus rarissime minute pilosus. Corolla violaceo-purpurea extus fere glabra. Capsula matura 1½-2 uncias longa, falcata.

Hab. In collibus Khasia ad 1000-6000 ped. alt., atque in radicibus horum montium provincias Assam et Sylhet penetrantibus neque alibi.

Vidi specimina viva spontanea numerosissima.

Folia subtus albida tomento indurato velata, in nervis demum glabra.

EXPLICATIO TABULÆ LIII.

Planta ex specimine exsiccato Khasiano depicta.

1. Fragmentum pàniculæ paullo ampliatum : calycibus *errore* nimis pilosis depictum.
2. Flos.
3. Stamina pilis antherarum albis.
4. Semen valde auctum.

TAB LIV.

DIDYMOCARPUS HOOKERI.

2. **Didymocarpus Hookeri** i. e. Didymocarpus sp. No. 21 Hook. f. et Th. in Herb.

Caulis molliter hirsutus, in media parte folia opposita alterna aut sub-terno-verticillata gerens. Folia petiolata ovato-oblonga crenulata, supra molliter hirsuta subtus secus venas hirsuta. Pedicelli vix glanduloso-pilosi bracteas ovatas longe superantes. Calyx ad tertiam aut dimidiam partem divisus, raris glanduliferis pilis conspersus, segmentis oblongis obtusis. Corolla extus pilosa. Capsula matura 1½- uncias longa, falcata.

Hab. In collibus Khasia ad 3000-6000 ped. alt.

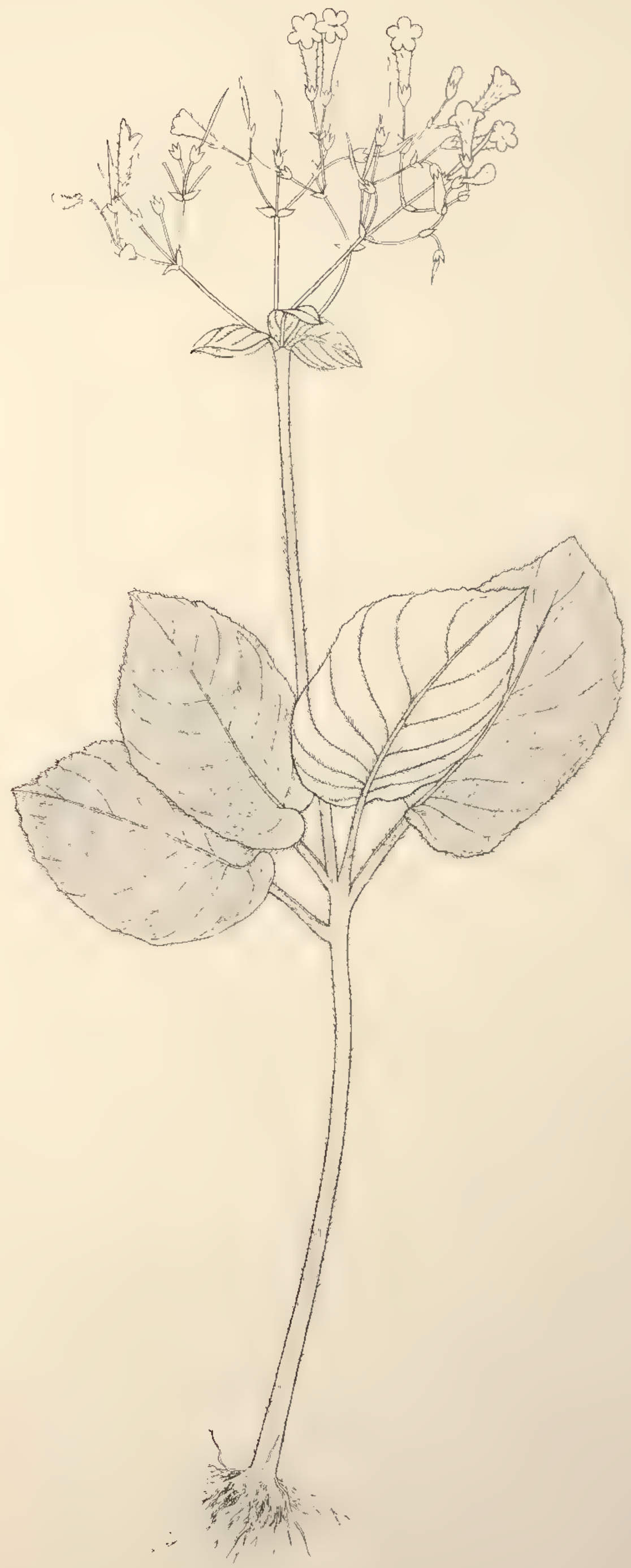
Vidi specimina viva spontanea numerosa.

The anthers are with white hairs and the stamens exactly as in the two adjoining species D. punduana and D. subalternans. This plant was collected by Drs. Hooker and Thomson who were unable to refer it to D. punduana from which nevertheless it hardly differs except in the nature of the indumentum : at least I have been able to lay hold of no other character.

Some of my specimens have leaves double the length and breadth of those in Dr. Hooker's specimen figured.

EXPLICATIO TABULÆ LIV.

Planta ex specimine Khasiano a Doct. Hk. et. Th. exsiccato depicta.



Drawn by Gopal Chandra Pás,
Bengal Government School of Art, Calcutta

Lithographed by Nanda Lal Samánta Student
Government School of Art Calcutta

Drawn by Gopál Chandra Dás,
Botanic Gardens, Calcutta.

Lithd by Chuni Lál Dás, Student,
Govt. School of Art, Calcutta.

TAB LV.

DIDYMOCARPUS SUBALTERNANS.

3. **Didymocarpus subalternans DC IX. p. 266.**

Caulis puberulus et sæpius pilosus, in media parte folia opposita aut verticillata (aliquando subalterna) gerens. Folia petiolata, oblonga ovali-oblonga aut obovata, crenata crenato-serrata aut duplicato-crenata, supra molliter dense pilosa subtus secus venas pilosa. Pedicelli valde glanduloso-pilosi bracteas ovatas longe superantes. Calyx ad tertiam partem divisus, segmentis lanceolatis, longis glanduligeris pilis conspersus. Corolla violaceo-purpurea extus valde pilosa. Capsula matura 1½-2 uncias longa, falcata.

Hab. In montibus Himalaya ad 3000-8000 ped. alt., in provinciis Sikkim et Bhotan.

Distributio Indica. In Nepalia et Himalaya boreali-occidentali.

Vidi specimina viva spontanea numerosa.

I do not feel certain that this species even has been rightly separated from D. punduana : but it is at least a good geographical variety. I know of no character that really distinguishes it from D. punduana except the more hairy corolla and calyx. It need hardly be explained that the ternate-verticillate leaves of D. punduana are not truly verticillate : one of the three leaves is often not exactly opposite the other two and then the leaves are subalternate. The leaves in D. subalternans are sometimes whitened underneath as is very commonly the case in D. punduana.

On the other side D. subalternans is near D. aromatica and D. oblonga, which are separated by their more glabrous calyces and shorter capsules : as well as by their not carrying their stem leaves near the middle of their stems.

EXPLICATIO TABULÆ LV.

Planta ex specimine recente Sikkimensi depicta.

N. B. Speciminis inter maxima fragmentum solum depictum est.

1. Stamina. Antheræ pilis albis ornatæ.

TAB LVI.

DIDYMOCARPUS OBLONGA.

4. Didymocarpus oblonga DC IX. p. 266. D. verticillata Wallich No. 783.

Caulis fusco-pilosus ad apicem folia verticillata aut approximata gerens. Folia petiolata oblonga acutiuscula duplicato-crenata supra pilosa subtus secus venas ferrugineo-tomentosa. Pedicelli vix glanduloso-pilosi bracteas ovatas longe superantes. Calyx fere glaber, ad tertiam partem divisus, segmentis oblongis rotundatis. Corolla violaceo-purpurea vix pilosa. Capsula matura ½-1 unciam longa, subrecta.

Hab. In montibus Himalaya, provinciæ Sikkim ad 7000-11000 ped. alt.

Distributio Indica. In Nepalia.

Vidi specimina sicca spontanea.

R. Brown discovered that D. verticillata Wallich No. 783 was merely a synonym of D. oblonga. Vid Horsfield Plant Jav. p. 118.

EXPLICATIO TABULÆ LVI.

Tabula cum figuris 1, 2, 3, 4, notatis omnino ex tabula 140 Wallichii exscripta.

1. Flos.
2. Discus et pistillum, calyce fisso.
3. Corolla.
4. Ovarii horizontalis sectio.

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Drawn by Gopal Chandra Das
Botanical Survey Office Calcutta

Lithographed by Calcutta Lithographic Works
Govt Survey Office Calcutta

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Drawn by Gopál Chandra Dás,
Botanic Gardens, Calcutta.

Lith'd. by Chuni Lál Dás, Student,
Govt. School of Art, Calcutta.

TAB. LVII.

DIDYMOCARPUS AROMATICA.

5 Didymocarpus aromatica DC IX. p 267

Caulis pilosus ad apicem (etiam quibusdam subradicalibus aliquando persistentibus) folia verticillata aut approximata gerens. Folia petiolata ovata obovata aut obovato-oblonga, crenata aut duplicato-crenata, supra puberula aut molliter pilosa, subtus secus venas pilosa. Pedicelli vix glanduloso-pilosi bracteas ovatas longe superantes. Calyx fere glaber ad tertiam partem divisus, segmentis ovatis. Corolla violaceo-purpurea vix pilosa. Capsula matura ½-1 unciam longa, subrecta.

Hab. In montibus Himalaya, provinciæ Sikkim ad 7000-11000 ped. alt.

Distributio Indica. In Nepalia, et Himalaya boreali-occidentali.

Vidi specimina sicca spontanea.

Judging by the two figures here given (which are copies of Wallich's) D. aromatica seems tolerably distinct from D. oblonga : but I doubt whether it would not be better to unite them. The presence or the absence of subradical leaves is accidental ; and the oblong-leaved specimens referred to D. oblonga are separated by no good line from the obovate-oblong-leaved specimens referred to D. aromatica.

EXPLICATIO TABULÆ LVII.

Tabula cum figuris e tabula 141 Wallichii exscripta est : capsulis ex specimine in Cal. Herbar. Conservato additis.

1. Flos fissus.
2. Calyx fissus cum basi ovarii discoque.
3. Stylus cum pistillo.
4. Capsula matura aucta.

1. bis. Capsulæ horizontalis sectio.

2. bis. Delc.

TAB LVIII.

DIDYMOCARPUS ACUMINATA.

6. Didymocarpus acuminata Wallich in Horsfield Pl. Jav. p. 118. i. e. Chirita sp. No. 9, Hook f. et Th. in Herb.

Caulis villosus. Folia supra basim caulis opposita petiolata, elliptico-ovata subacuminata crenata, supra villoso-hirta subtus secus venas villosa et in pagina arcte glandulosa. Pedicelli vix glanduloso-pilosi bracteas parum superantes. Bracteæ glabræ obovatæ per paria unitæ vaginantes. Calyx minutissime puberulus ad quartem partem divisus segmentis rotundatis. Capsula matura 1-½ unciam longa leviter falcata.

Hab. In collibus Khasia ad 2000-4000 ped. alt., (præsertim in meridionali facie.)

Vidi specimina viva spontanea.

EXPLICATIO TABULÆ LVIII.

Planta ex specimine exsiccato Khasiano depicta.

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Drawn by Gouri Chandra Das
Botanical Gardens, Calcutta

Lithographed at the Government School of Art, Calcutta

TAB. LIX.

DIDYMOCARPUS VILLOSA.

7. **Didymocarpus villosa DC IX p. 266.**

Caulis patentim villosus. Folia supra basim caulis opposita petiolata, ovata aut oblonga, crenata aut duplicato-crenata, supra villosa aut hirsuta subtus secus venas villosa. Pedicelli glanduloso-pilosi bracteas ovatas longe superantes. Calyx parvus semi-corollinus albidus glaber ad dimidiam partem (vel altius fere ad basim) divisus segmentis oblongis obtusis aut obovatis. Corolla violaceo-purpurea vitreo-glabra. Capsula ½-1 unciam longa, subrecta.

Hab. In montibus Himalaya, provinciæ Sikkim ad 5000-10000 ped. alt.

Vidi specimina viva spontanea numerosa.

EXPLICATIO TABULÆ LIX.

Planta ex specimine recenti Sikkimensi depicta.

1. Calyx fissus explicatus.
2. Stamina.
3. Pistillum.

TAB. LX.

DIDYMOCARPUS AURANTIACA.

8. **Didymocarpus aurantiaca nov. sp.**

Caulis puberulus vel pilosus, aliquando abbreviatus. Folia supra basim caulis opposita petiolata, ovata aut rotundata crenata, supra hirsuta subtus secus venas villosa. Pedicelli glanduloso-pilosi bracteas ovatas longe superantes. Calyx glanduloso-pilosus ad tertiam partem divisus, segmentis ovatis acutiusculis. Corolla coccineo-aurantiaca vitrea glabra. Capsula matura $1\frac{1}{2}$-2 uncias longa, subrecta.

Hab. In convallibus Himalayæ provinciæ Sikkim ad 1000-4000 ped. alt., sub madidis rupibus.

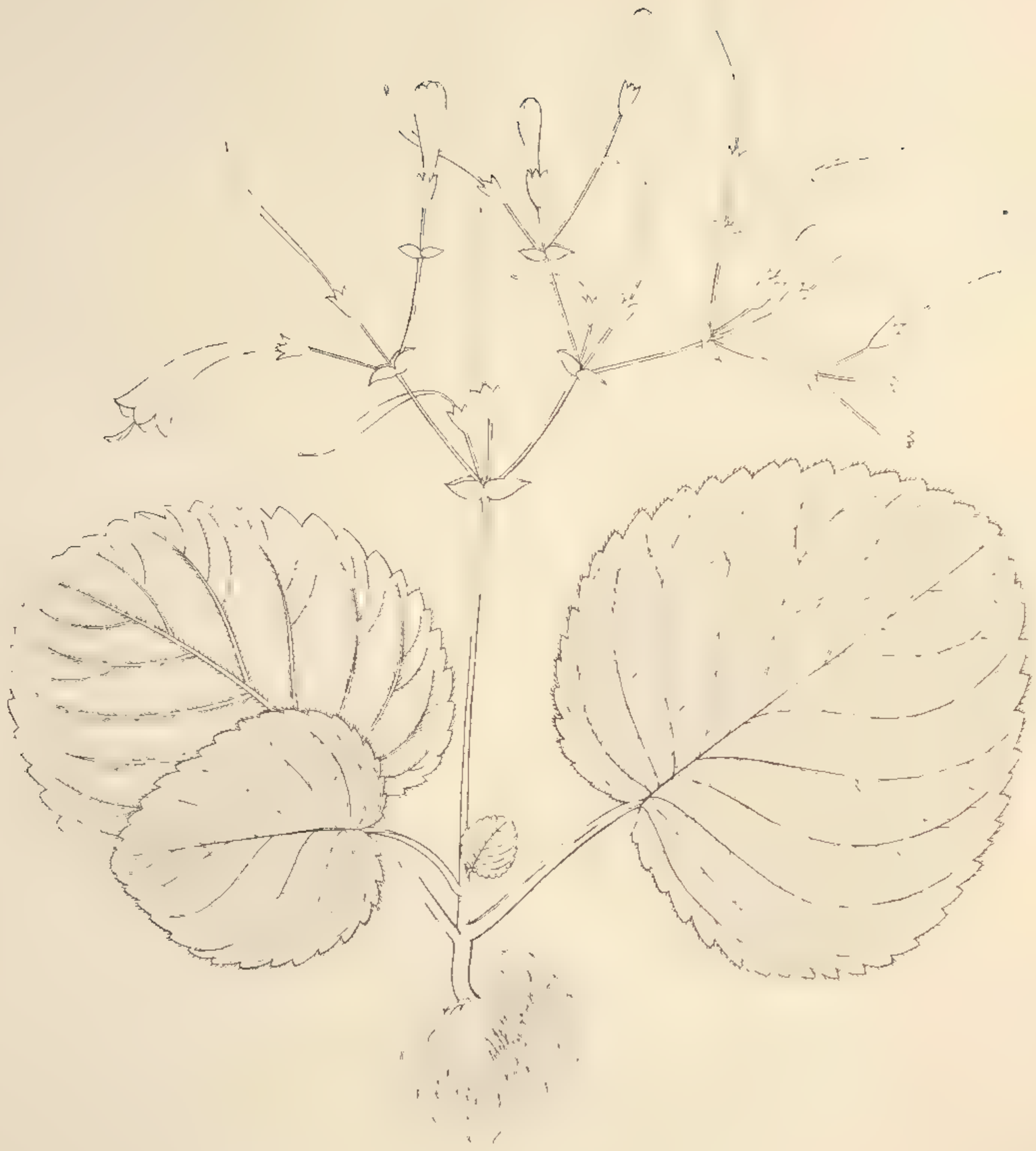
Vidi specimina viva spontanea.

This most beautiful species seems confined to a very narrow area in outer Sikkim and though so striking in appearance to have been altogether overlooked. This is remarkable for, though it may be local in distribution, one of its localities is by the way-side in the well-known road from Darjeeling to the Runjeet cane-bridge.

EXPLICATIO TABULÆ LX.

Planta ex specimine recenti Sikkimensi depicta.

1. Calyx fissus explicatus.
2. Stamina.
3. Pistillum.
4. Capsula matura.



Lithd. by Káli Dás Pál, Student.
Govt. School of Art, Calcutta

TAB. LXI.

DIDYMOCARPUS OBTUSA.

9. **Didymocarpus obtusa** DC IX. p. 267.

Caulis puberulus vel pilosus, aliquando abbreviatus. Folia supra basim caulis opposita, longissime petiolata, ovata aut ovali-oblonga crenata, supra hirsuta subtus secus venas villosa. Pedicelli glanduloso-pilosi bracteas ovatas superantes. Calyx glanduloso-pilosus ad tertiam partem divisus, segmentis ovatis. Corolla atro-violacea glabra. Capsula 1½-2 uncias longa, vix falcata.

Hab. In montibus Himalaya provinciæ Sikkim ad 2000-4000 ped. alt.

Distributio Indica. In Nepalia.

Corolla quam in D. aurantiaca multo minor et planta tenuior. Corolla deficiente, specimina exsiccata vix a D. aurantiaca distinguenda statura minore, foliis minus orbiculatis, radicalibus longius petiolatis, subtus plus minus albescentibus, et calycis lobis minus acutis.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ LXI.

Planta ex specimine exsiccato Sikkimensi depicta.

TAB. LXII.

DIDYMOCARPUS ANDERSONI.

10. Didymocarpus Andersoni nov. sp. D. macrophylla Hook. f. et Th. in Herb. partim.

Caulis brevis hirsutus. Folia opposita longe petiolata ovata aut rotundata duplicato-crenata supra hirsuta subtus secus venas ferrugineo-hirsuta. Pedicelli bracteis vaginantibus inclusi. Bracteæ obovatæ per parvia unitæ, infimæ villoso-hirsutæ, supremæ cum pedicellis glabræ. Calyx glaber vix ad quartem partem divisus segmentis rotundatis. Corolla glabra violaceo-purpurea Capsula 1-1½ unciam longa erecta.

Hab. In montibus Himalaya provinciæ Sikkim ad 1000-4000 ped. alt. alibi ignota. Ex Hook. f. et Th. ad 9000 ped. alt., sed horum auctorum specimina in Cal. Herb. conservata cum D. macrophyllæ speciminibus intermixta. Beatus Anderson qui speciem discriminavit ejus habitationem accurate descripsit.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ LXII.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Calyx fissus et explicatus.
2. Stamina.
3. Pistillum.

Drawn by Gopal Chandra Dé
Botanic Gardens, Calcutta

Drawn by Gopal Chandra Das
Botanic Gardens, Calcutta

Lithd. by Kedár Náth Dás, Student,
Govt. School of Art, Calcutta.

TAB. LXIII.

DIDYMOCARPUS MACROPHYLLA.

11. **Didymocarpus macrophylla DC IX. p. 267.**

Subacaulis. Folia longe petiolata ovata aut ovato-oblonga basi sæpe cordata, crenato-serrata, supra hirsuta subtus minute dense floccosa. Pedicelli vix glanduloso-pilosi bracteas ovatas longe superantes. Calyx glaber ad quartem partem divisus, segmentis ovatis aut rotundatis. Corolla glabra violaceo-purpurea. Capsula 1-1½ unciam longa erecta.

Hab. In Nepalia. In Himalaya boreali-occidentali (ex Wallich.)

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ LXIII.

Planta ex specimine exsiccato Sikkimensi depicta.

TAB. LXIV.

DIDYMOCARPUS PEDICELLATA.

12. Didymocarpus pedicellata DC IX. p. 267.

Subacaulis Folia longe petiolata ovata crenata glabrata supra crebre nigro-punctata. Pedicelli vix glanduloso-pilosi bracteas vaginantes parum superantes. Bracteæ obovatæ per paria unitæ glabræ Calyx glaber ad quartam partem divisus segmentis latis rotundatis. Corolla glabra violaceo-purpurea. Capsula 1-1½ unciam longa falcata.

Hab. In montibus Himalayæ boreali-occidentalis ac Nepaliæ.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ LXIV.

Planta ex specimine exsiccato Sikkimensi depicta.

Drawn by Gopal Chandra Das
Botanical Gardens Calcutta

Lithographed by Tulsi Das Pal Student
of the Art School Calcutta

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Drawn by Gova Chattopadhya,
Botanical Survey of India

Lithd. by Mahomed Yasin, Survr. Genl's. Office Calcutta

TAB. LXV.

DIDYMOCARPUS MORTONI.

13. **Didymocarpus Mortoni** nov. sp. (a me sub nomine D. sikkimensis olim distributa.)

Caulis villosus. Folia opposita petiolata oblonga subacuta aut elliptica supra villosa subtus secus venas pilosa. Pedicelli valde glanduloso-pilosi bracteas ovatas longe superantes. Calyx valde glanduloso-pilosus ad basim partitus segmentis ($\frac{1}{4}$ unciam longis) anguste oblongis aut lanceolatis. Corolla glanduloso-pilosa atro-violacea. Capsula (junior glanduloso-pilosa) $\frac{3}{4}$-1 unciam longa erecta.

Hab. In montibus Himalaya provinciæ Sikkim ad 3000-6000 ped. alt.

Species quoad calycem partitum et corollæ figuram valde distincta.

Vidi specimina viva spontanea numerosa.

I distributed this to several correspondents as D. sikkimensis nov. sp. but the name has been taken exception to, so I have named it again in honor of Major Morton, the present Commissioner of Sikkim and grandson of the immortal Roxburgh.

EXPLICATIO TABULÆ LXV.

Planta ex specimine recente Sikkimensi depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum.
4. Capsula matura.

TAB. LXVI.

DIDYMOCARPUS KURZII.

14. Didymocarpus (?) Kurzii nov. sp.

Caulescens pilosa. Folia alterna (inferiora saltem petiolata) elliptica crenata supra pilosa subtus secus venas breviter villosa. Pedunculi axillares longiusculi 1-2-flori cum pedicellis glanduloso-pilosi. Bracteæ ovatæ pilosæ pedicellis multo breviores. Calyx pro genere maximus ½-¾ unciam longus, fere ad basin partitus segmentis oblongis acutis. Capsula pilosa 2-3-uncias longa.

Hab. In Sikkim ad 5000-6000 ped. alt. prope Kursiong qua collexit S. Kurz.

Amic. Kurzii specimina, optima sed deflorata, omnino alternifolia videntur. Stigma et capsula Didymocarpi. Calyx et pedunculi pauciflori Chiritæ.

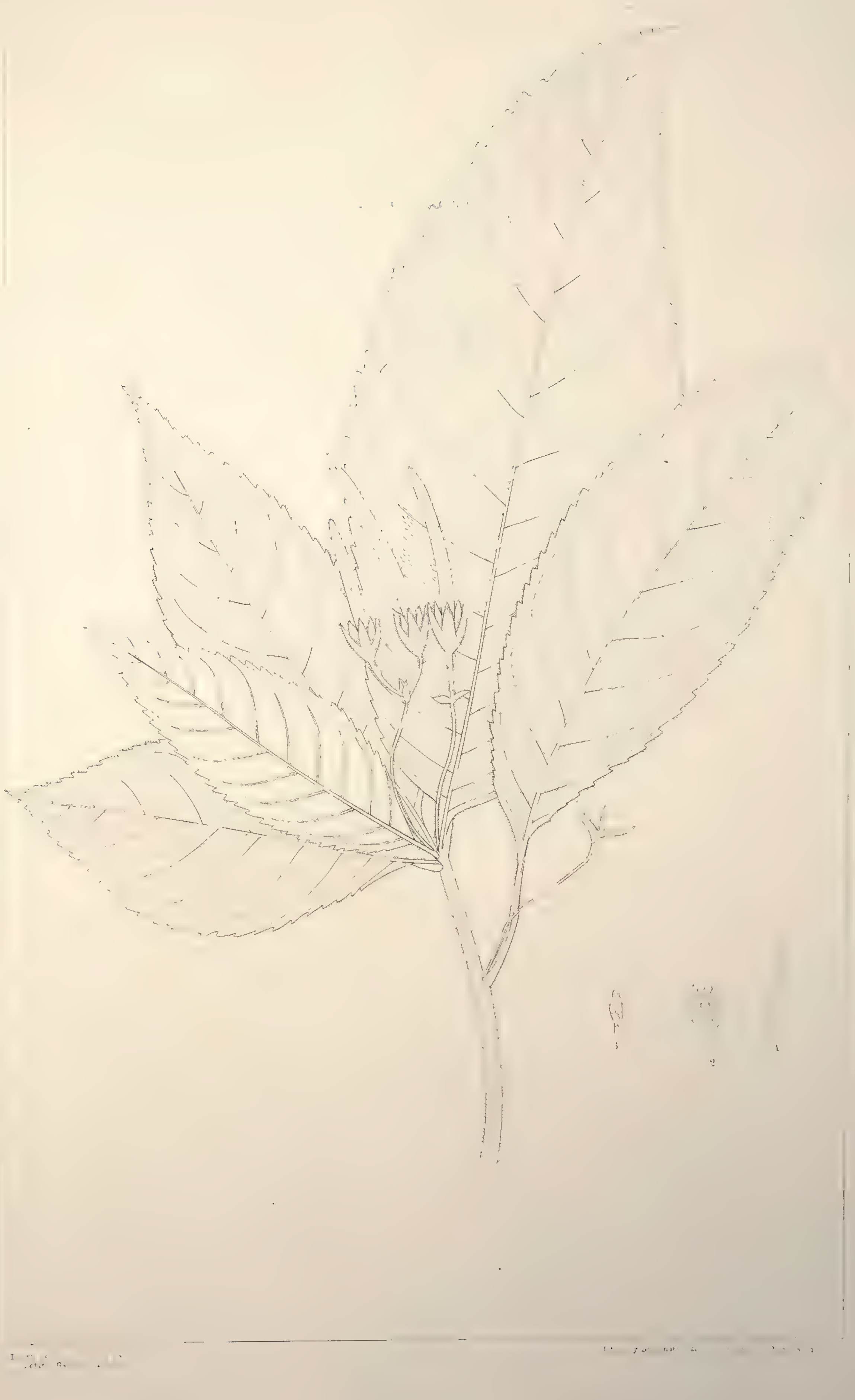
Aut Didymocarpi eximia species aut (flore ignoto) novum genus.

Vidi specimina sicca spontanea in herb. Kurz conservata.

EXPLICATIO TABULÆ LXVI.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Pistillum.
2. Calyx.
3. Semen valde auctum.



TAB. LXVII.

DIDYMOCARPUS LANUGINOSA.

15. Didymocarpus lanuginosa DC IX. p. 268.

Acaulis. Folia longe petiolata crassa, elliptica crenata supra hirta subtus ferrugineo-lanuginosa venis incrassatis. Pedicelli graciles. Bracteæ subobsoletæ. Calyx parum pilosus ad dimidiam partem divisus segmentis lanceolatis. Corolla extus glabra, labio inferiore intus albo-piloso, atro-violacea. Stamina 4. Capsula ¾-1 unciam longa, erecta.

Hab. In collibus Khasia ad 5000 ped. alt. In Bhotan. In Sikkim ad 6000-7000 ped. alt.

Distributio Indica. In Nepalia et Himalaya boreali-occidentali.

Vidi specimina viva spontanea.

The only Bengal species of Didymocarpus with four fertile stamens.

EXPLICATIO TABULÆ LXVII.

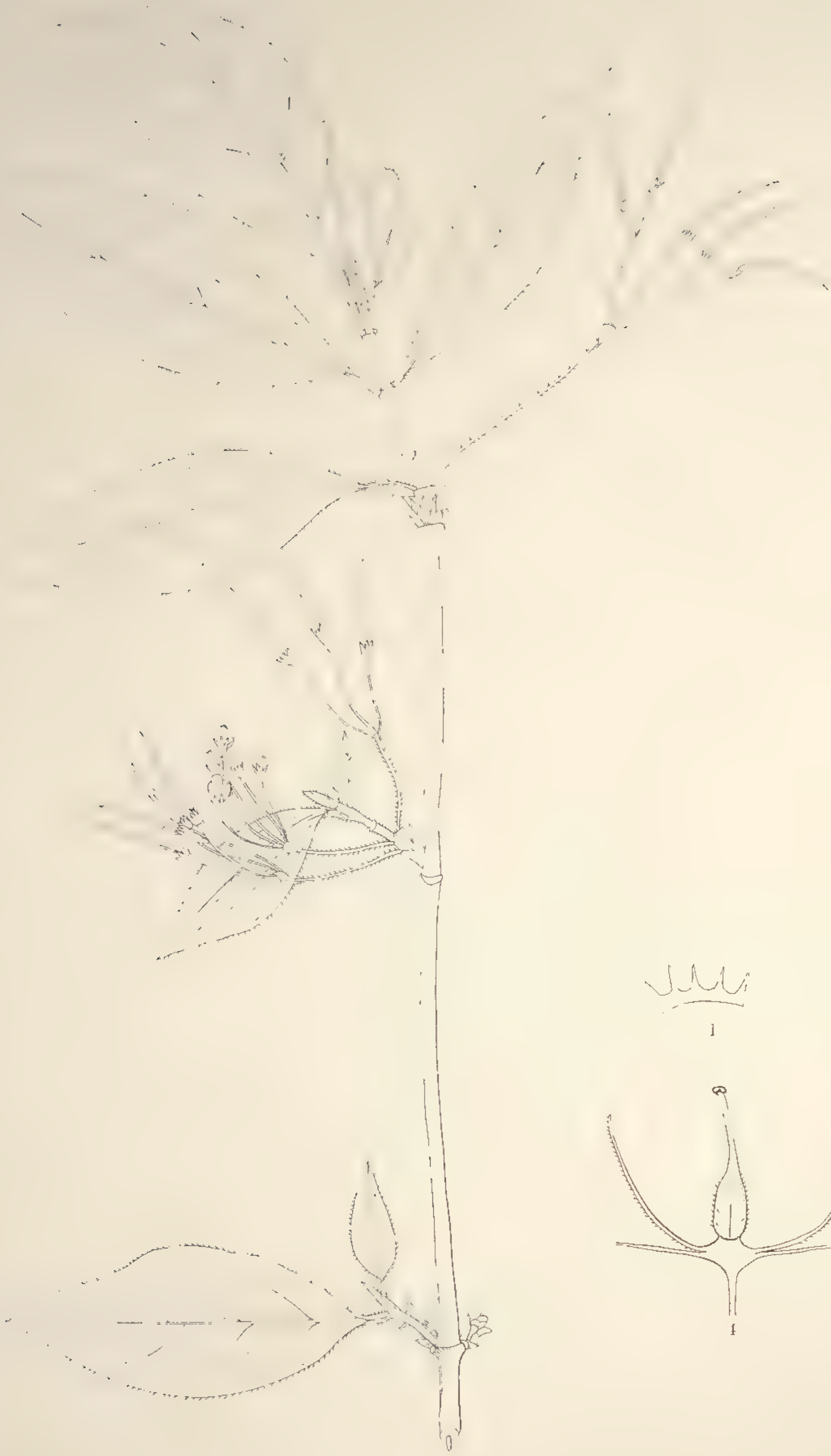
Planta ex specimine exsiccato Khasiano depicta.

1. Calyx fissus explanatus valde auctus.
2. 3. Corollæ duo labia.
4. Stamina.
5. Stylus.
6. Semen valde auctum.

V. CHAMPIONIA Gardn. [Vid. Walp. Ann. III., p. 96.]

Corolla subsphærica limbo leviter 5-fido. Discus nullus. Stigma integrum orbiculatum. Capsula septicide bivalvis, valvis rectis nec contortis. Pedunculi axillares di-tri-chotomo-cymosi. Stamina 4 fertilia : antheræ duæ demum quasi in unum confluentes. Frutices, foliis oppositis.

" Novum genus Bœæ proximum" Hook. f. et Th. in Herb. Differt ab omnibus Didymocarpeis capsulis septicidis.



TAB. LXVIII.

CHAMPIONIA MULTIFLORA.

1. **Championia multiflora (nov. sp.) sub nomine Didymocarpæa scabra olim distributa.**

Lignosa suffrutescens erecta: ramis lateralibus abbreviatis ferrugineo-hirsutis, inflorescentiam ex axillis foliorum ortam gerentibus. Folia petiolata inæqualia, lanceolata vix serrata, supra scabra subtus secus venas pilosa. Pedunculi parum divisi tenues pauciflori pilis nigrescentibus valde hirsuti. Bracteæ lineares hirtæ. Calyx alte divisus fere glaber, corolloideus, segmentis anguste lanceolatis. Corolla alba subæqualiter 5-fida. Capsula 1-2-uncias longa, falcata.

Hab. In collibus Khasia ad 500-5000 ped. alt. In Assam et Bhotan. In Sikkim ad 1000-5000 ped. alt. frequens.

Vidi specimina viva spontanea numerosa.

I formerly called this plant in ms. Didymocarpæa scabra, under the idea that it was closely allied to the shrubby Didymocarpi. But it differs widely in the strictly septicidal dehiscence of the fruit, which I overlooked altogether.

I then discovered that it was the same genus as Gardner's Championia, and on removing it thither Mr. Kurz advised me to take up the specific name multiflora and drop scabra, because this plant according to the tradition preserved in the Calcutta Herbarium is the lost Bœa multiflora of Wallich. The plant fits the descriptions of Bœa multiflora very poorly; but, as taking the specific name of multiflora obviates a chance of altering the specific name again, I have been glad to accept Mr. Kurz' suggestion.

EXPLICATIO TABULÆ LXVIII.

Planta ex specimine exsiccato Sikkimensi depicta.

1. Calyx fissus et explanatus.
2. Corolla fissa et explanata.
3. Stamen junius.
4. Floris verticalis sectio : discus nullus.
5. Semen valde auctum.

VI. CHIRITA DC IX., p. 268.

Stamina fertilia 2. Corollæ tubus elongatus. Discus hypogynus quasi cyathula subpentagona. Stigma unilaterale bifidum. Capsula loculicide bivalvis, valvis rectis nec contortis. Folia opposita.

Differt a Didymocarpo nonnisi stigmate bifido. Vid. observationes sub Chirita primulacea.

Species infra descriptæ :

Sect. a. Suberectæ herbaceæ, mediocres aut parvæ.

1. Ch. urticæfolia
2. Ch. Hookeri.
3. Ch. macrophylla.
4. Ch. glabra.
5. Ch. pumila.
6. Ch polyneura.
7. Ch. bifolia.
8. Ch. hamosa.

Sect. b. Caulis lignosus, breviter repens aut vix ullus.

9. Ch. speciosa.

Sect. c. Suffrutex caule lignescente erecto.

10. Ch. acuminata.

Sect. d. Caulis subnullus ; folia rosulata.

11. Ch. primulacea.

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Lithd. by Mahomed Yasin, Survr. Genl's C

TAB. LXIX.

CHIRITA URTICÆFOLIA.

1. **Chirita urticæfolia DC IX. p. 268.**

Herbacea caulescens. Folia petiolata elliptica acuminata serrata (aliquando crenata) supra sparsim. subtus secus venas, pilosa. Pedunculi axillares terminalesque 1-vel pauci-flori parum pilosi, bracteis ovato-lanceolatis glabratis aut parum pilosis. Calyx viridis aut vix corolloideus setoso-villosus alte divisus segmentis lanceolatis acuminatis. Corolla magna tubo campanulaceo, extus pilosa, purpureo-rosea aliquando tubo flavido, casu omnino alba. Ovarium fere glabrum, stylo aliquando parum glanduloso-piloso. Capsula 5-6 uncias longa.

Hab. In montibus Himalaya, provinciarum Sikkim et Bhotan ad 5000-9000 ped. alt.

Distributio Indica. In Nepalia.

Vidi specimina viva spontanea numerosa.

This species is easily distinguished when alive from C. polyneura (No. 5 infra) by its larger flowers which are reddish purple in the mouth ; in C. polyneura the flowers are bluish purple in the mouth.

In the dried state C. urticæfolia and C. polyneura have been much intermixed. C. urticæfolia usually has the serratures of the leaves acute while in C. polyneura the leaves are commonly but lightly crenate. But some specimens of C. polyneura have the leaves more acutely crenated than some specimens of C. urticæfolia. The easiest distinction I have found is in the bracts on the peduncle, which are very hispid pilose in C. polyneura, while in C. urticæfolia they are glabrous, or at least much less hairy than either the leaves or the calyx.

EXPLICATIO TABULÆ LXIX.

Planta ex tabula 50 Wallichii (Plantæ Asiaticæ rariores) exscripta. Corolla fissa et explanata, ex eadem tabula exscripta.

1. Stamina.
2. Pistillum a facie et a latere visum.
3. Ovarii junioris horizontalis sectio.

TAB. LXX.

CHIRITA HOOKERI.

2. Chirita Hookeri nov. sp. i. e. Chirita No. 22 Hook. f. et Th. in Herb.

Herbacea caulescens. Folia petiolata elliptica acuta serrulata utrinque villosa. Pedunculi axillares subterminalesque sub-1-flori hirsuti. Calyx sub-corolloideus dense adpresse hirsutus vix ad dimidiam partem divisus segmentis ovato-lanceolatis. Corolla extus vix pilosa flavido-purpurea. Ovarium cum stylo fere glabrum. Capsula 5-6 uncias longa.

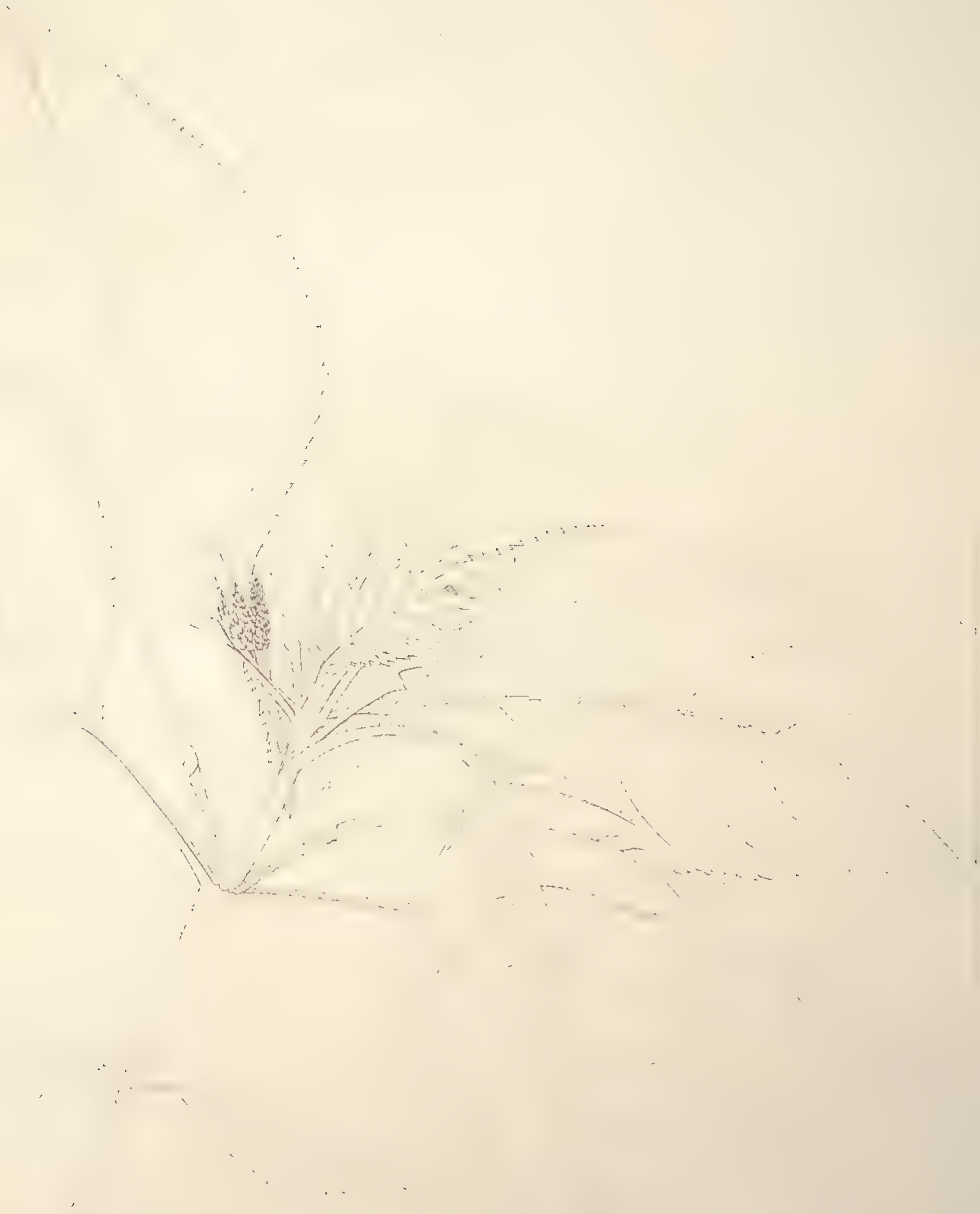
Hab. In Bengalia orientali (ex Griffith) verosimiliter in Assam superiore.

A Chirita urticæfolia calyce dense adpresso hirsuto distinguenda.

Vidi specimen siccum spontaneum.

EXPLICATIO TABULÆ LXX.

Planta ex specimine exsiccato Assamico depicta.



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Drawn by C. a C. al' a Hag,
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Lith. by the Government Survey Genl's Office, Ca. da

TAB. LXXI.

CHIRITA MACROPHYLLA.

3. Chirita macrophylla DC IX. p. 269.

Herbacea caulescens. Folia longe petiolata, ovata aut oblonga, acuta, serrata aut crenata, supra sparsim subtus secus venas hirtulo-pilosa. Pedunculi præcipue terminales 1-multiflori, sæpius 1-2-divisi, bracteis ovatis fere glabratis. Calyx viridis subglaber, ad tertiam partem aut fere ad basim divisus, segmentis lanceolatis acutis. Corolla extus fere glabra, flava, tubo elongato. Ovarium glabrum stylo parum glanduloso-piloso. Capsula 5-6 uncias longa.

Hab. In montibus Himalaya, provinciarum Sikkim et Bhotan ad 5000-9000 ped. alt.

Distributio Indica. In Nepaliâ.

Vidi specimina viva spontanea numerosa.

The leaves are in this plant occasionally very large as shewn by Wallich Plantæ Asiaticæ rariores t. 72, but in general they are smaller than in the allied species. The plant is recognised at once by the yellow flower with a very long tube.

There are two longitudinal folds on the lower lip of corolla within. I gathered one specimen in which the barren fifth stamen was greatly enlarged and petaloid.

EXPLICATIO TABULÆ LXXI.

Planta ex specimine recenti Sikkimensi depicta.

1. Calyx fissus et explanatus.

   Corolla fissa et explanata, staminibus abscissis.

3. Stamina.

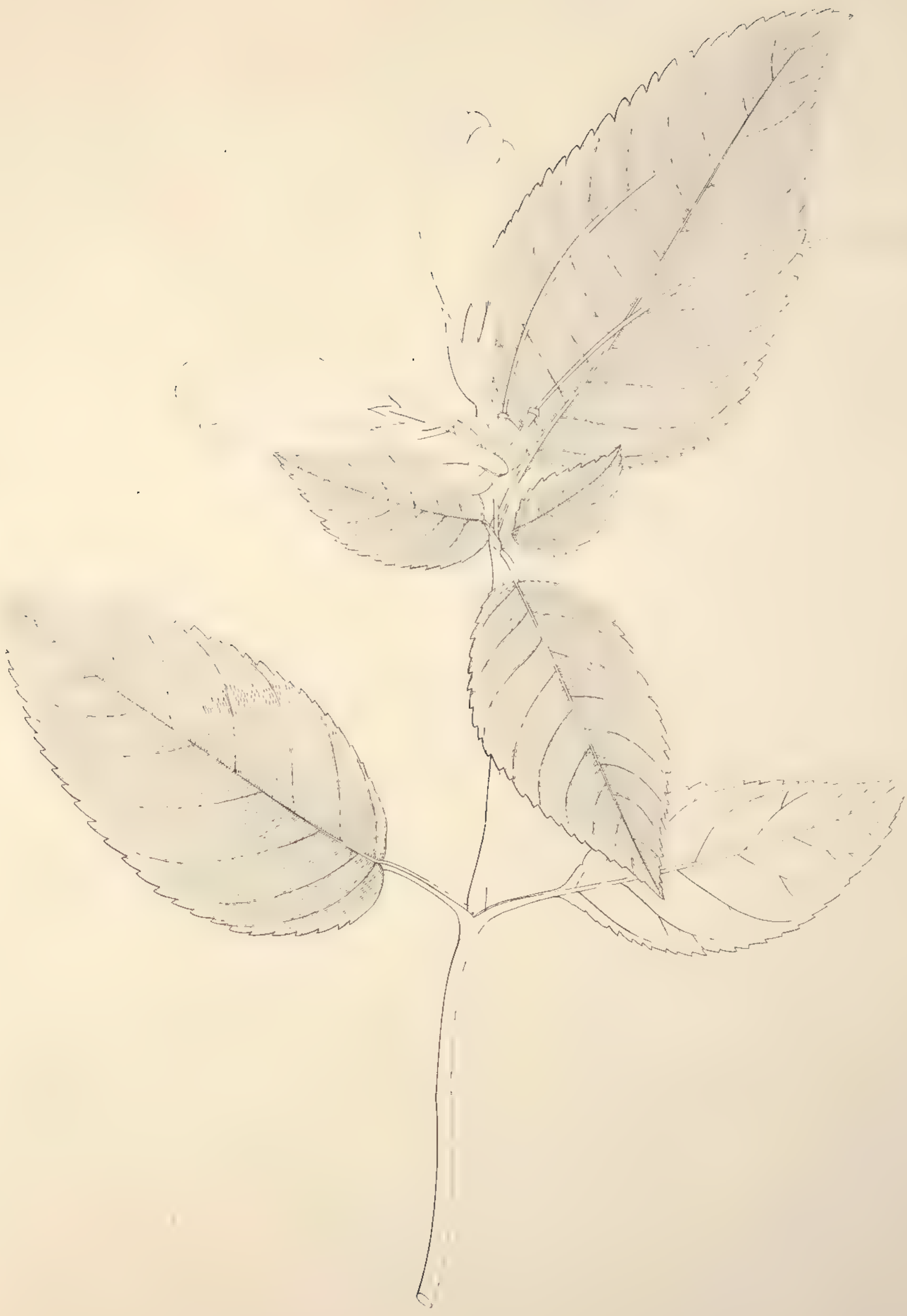
4. Pistillum cum disco, a facie et a latere visum.

TAB. LXXII.

CHIRITA POLYNEURA.

This plate was prepared from a specimen in the Calcutta Herbarium of Chirita dimidiata Wallich. I have since seen that this is the same as Chirita polyneura Miquel. And this plate is therefore merely a duplicate of the species shewn below in plates LXXV LXXVI q. v.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.



Drawn by Gopa Chandra Das,
Botanic Gardens Calcutta

Lithd by Amir Ali, Survr Genl's Office Calcutta

TAB. LXXIII.

CHIRITA GLABRA.

4. Chirita glabra ? Miquel Flor. Ind. II. p. 729. i. e. Chirita sp. 26 Hook. f. et Th. in Herb.

Herbacea caulescens. Folia petiolata oblonga acuta vix crenulata, juniora margine strigosula, quoad cæterum glabra lucida, rarius supra paucis strigis conspersa. Pedunculi axillares 1-2 divisi pauciflori cum angustis bracteis pedicellisque glabri. Calyx glaber ad mediam partem divisus segmentis lanceolatis. Corolla glabra lilacina, tubo elongato versus basim albescente. Ovarium cum stylo glabrum. Capsula 5-6 uncias longa.

Hab. In convallibus Himalaya provinciæ Sikkim ad 1000-3000 ped. alt.

Vidi specimina sicca spontanea.

I only guess this species to be Ch. glabra of Miquel from his description : I have no authentic specimen for comparison.

EXPLICATIO TABULÆ LXXIII.

Planta ex specimine Sikkimensi a beato T. Andersono exsiccato depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.

TAB. LXXIV.

CHIRITA PUMILA.

5. Chirita pumila DC IX. p. 269 = Calosacme flava Wallich list No. 801.

Herbacea caulescens. Folia petiolata elliptica acuta, crenata aut leviter serrata, utrinque strigoso-pilosa. Pedunculi 1-2-flori cum pedicellis strigilloso-pilosi. Bracteæ ovatæ plus minus connatæ albis strigis pilosæ. Calyx valde albo-strigosus alte divisus segmentis lanceolato-linearibus. Corolla flava extus pilosa. Ovarium subglabrum. Stylus minute pilosus. Capsula 3-4 uncias longa.

Hab. In Nepalia et Himalaya boreali-occidentali.

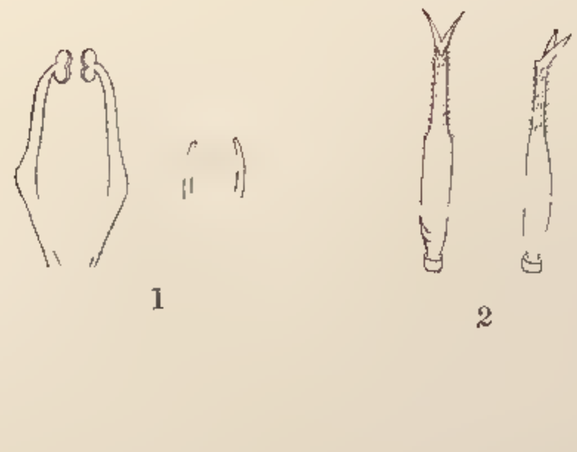
Caulis pumilus sæpissime unico jugo foliorum munitus.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ LXXIV.

Plantæ ex tabulis ad Landour in Himalaya boreali-occidentali depictis exscriptæ.

1. Stamina.
2. Pistillum cum disco, a facie et a latere visum.



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Drawn by Gopal Chandra Das
Botanic Gardens Calcutta

Lithd by Kali Das Pal Student,
Govt School of Art, Calcutta.

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Lithd. by Kamakha Náth Pál, Student,
Govt. School of Art, Calcutta.

TAB. LXXV.

CHIRITA POLYNEURA α.

6. **Chirita polyneura Miq. Flor Ind II. p. 728. Calosacme dimidiata Wall. No. 803.**

Herbacea caulescens. Folia petiolata inæqualia elliptica acuta crenata aut leviter serrata supra villoso-pilosa, subtus villosa aut glabra nervis validis prominulis. Pedunculi axillares terminalesque 1-2-divisi pauciflori bracteis ovato-lanceolatis, margine saltem strigoso-pilosis. Pedicelli breves aut elongati, strigoso-villosi aut glabrati. Calyx valde albo-strigosus aut corolloideus glabratus parum aut fere ad basin divisus. Corolla extus pilosa aut glabra, fauce lilacina, tubo albido inflato aut anguste oblongo Ovarium fere glabrum. Stylus minute pilosus. Capsula 5-6 uncias longa.

Hab. In convallibus Himalaya, provinciarum Sikkim et Bhotan ad 2000-6000 ped. alt. sat communis. In collibus Khasia ad 2000-5000 ped. alt.

Distributio Indica. In Burma et Malaya.

Vidi specimina viva spontanea numerosa.

This species is very abundant and very variable : and my three plates LXXII, LXXV, LXXVI were prepared under the idea that it could be separated into three species.

α. Thomsoni. Folia subtus strigoso-villosa. Pedicelli elongati glabrati. Calyx herbaceus valde albo-strigosus altius vel fere ad basim divisus. Corolla extus pilosa tubo anguste oblongo.

Habitat. In Himalaya ad 3000-6000 ped. alt. In Khasia ad 4000 ped. alt.

EXPLICATIO TABULÆ LXXV.

Planta ex specimine recente Sikkimensi depicta.

1. Calyx fissus et explanatus.

2. Stamina.

3. Pistillum cum disco, a facie et a latere visum.

TAB. LXXVI.

CHIRITA POLYNEURA β.

β amabilis. Folia subtus glabra aut secus venas vix pilosa. Pedicelli abbreviati villosi. Calyx corolloideus glaber parum divisus. Corolla extus glabra tubo inflato.

Hab. In Himalaya ad 1000-2000 ped. alt. In Khasia ad 2000-5000 ped. alt.

I have distributed this form as a species, Chirita amabilis. This and the form α. Thomsoni both grow on the Government Cinchona Plantation in Sikkim, α. Thomsoni above and β. amabilis at the bottom; and the Head Gardener there Mr. Gammie after ample observation inclined to think them two distinct plants.

These two types however do not at all exhaust the variations of the species. The Khasia specimens leaves vary from quite glabrous underneath to very villose in an unbroken series. The Javan plants from Miquel's description combine the characters of α. and β. somewhat differently.

Miquel remarks on the resemblance of this species to Ch. Horsfieldii. It is indeed so remarkable, that I doubt whether I could separate dried specimens of the shoots of Ch. Horsfieldii from dried specimens of Ch. polyneura β. But Ch. Horsfieldii is a woody shrub.

In Ch. polyneura β. the peduncle is sometimes shortly connate with the petiole of the leaf in a manner curiously foreshadowing the approach of Ch. hamosa.

EXPLICATIO TABULÆ LXXVI.

Planta ex specimine recente Sikkimensi depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.

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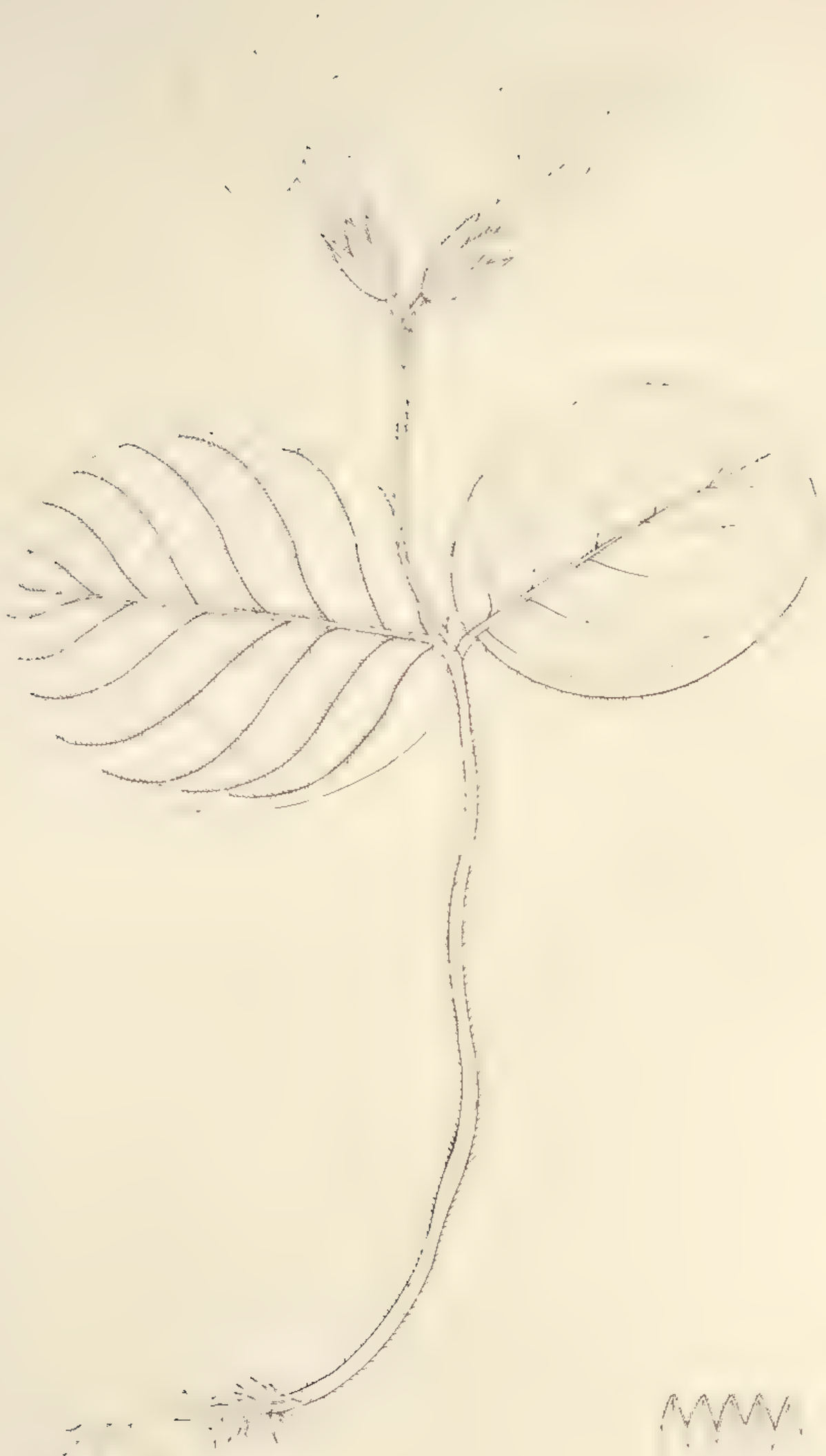
Drawn by Gopal Chunder Das,
Botanical Draftsman

Printed by Tamizdoot Survey, Geodetic Office Calcutta



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TAB. LXXVII.

CHIRITA BIFOLIA.

7. Chirita bifolia DC IX. p. 269. Calosacme amplectens Wallich No. 806.

Herbacea caulescens. Folia (sæpissime duo tantum) sessilia elliptico-rotunda crenata, utrinque molliter pilosa. Pedunculus terminalis 1-2-florus bracteis oblongis pilosis. Calyx hirsutus viridis ad mediam partem vel ultra divisus, segmentis lanceolatis. Corolla extus pilosa fauce lilacina tubo albido. Ovarium pilosum. Antheræ valde pilosæ.

Hab. In Nepalia et Himalaya boreali occidentali.

Vidi specimina sicca spontanea.

DESCRIPTIO TABULÆ LXXVII.

Planta ex specimine exsiccato occidentali Himalayensi depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.

TAB. LXXVIII.

CHIRITA HAMOSA.

8. **Chirita hamosa R Brown in Horsfield Plantæ Javanicæ rariores p 117. Chirita sp. 20 Hook. f. et Th. in Herb. Didymocarpus hamosa Wallich Cat. 788. B.**

Herbacea caulescens. Folia petiolata oblonga acuta fere integra utrinque pilosa. Pedunculus axillaris cum petiolo connatus : pedicellis bifidis simplicibusve. Calyx pilosus viridis alte divisus segmentis linearibus. Corolla fere glabra, pro genere pusilla, tubo angusto. Stylus pilosus. Capsula falcata, aliquando hamosa, 2-3 uncias longa.

Hab. In collibus Khasiya ad 3000-4000 ped. alt.

Distributio. In Birma inferiore ad Martaban.

Corolla fere Didymocarpi at stigma potius Chiritæ. Capsula aliquando parum falcata sed species pedunculo connato aliisque signis abunde distincta.

Vidi specimina sicca spontanea.

DESCRIPTIO TABULÆ LXXVIII.

Planta ex specimine exsiccato Khasiano depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.

Lith'd by A. Mac'k, Surv. Genl's Office, Calcutta

TAB. LXXIX.

CHIRITA SPECIOSA.

9. Chirita speciosa Kurz in Calc. Herb. = Chirita No. 21 Hook. f. et Th. in Herb.

Caulis brevis supra terram repens ligneus nodis abbreviatis. Folia petiolata ovata acuta crenata aut serrata, utrinque ferrugineo-hirsuta. Pedunculi quasi radicales ferrugineo-hirsuti bracteis anguste lanceolatis. Calyx dense ferrugineo-hirsutus ad mediam partem divisus segmentis lanceolatis. Corolla elongata extus pilosa violaceo-purpurea. Ovarium cum stylo longis articulatis pilis vestitum. Capsula ferrugineo-villosa vel demum fere glabrata recta 3-5 uncias longa.

α. **Pedunculi 1-3-flori. Antheræ longius pilosæ.**

Hab. In collibus Khasiya ad 2000-4000 ped. alt.

Vidi specimina viva spontanea numerosa.

EXPLICATIO TABULÆ LXXIX.

Planta ex specimine exsiccato Khasiano depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.

TAB. LXXX.

CHIRITA SPECIOSA. β

Ch. speciosa. β

Pedunculi bis-ter-divisi multiflori. Calyx ad unciam et ultra longus.

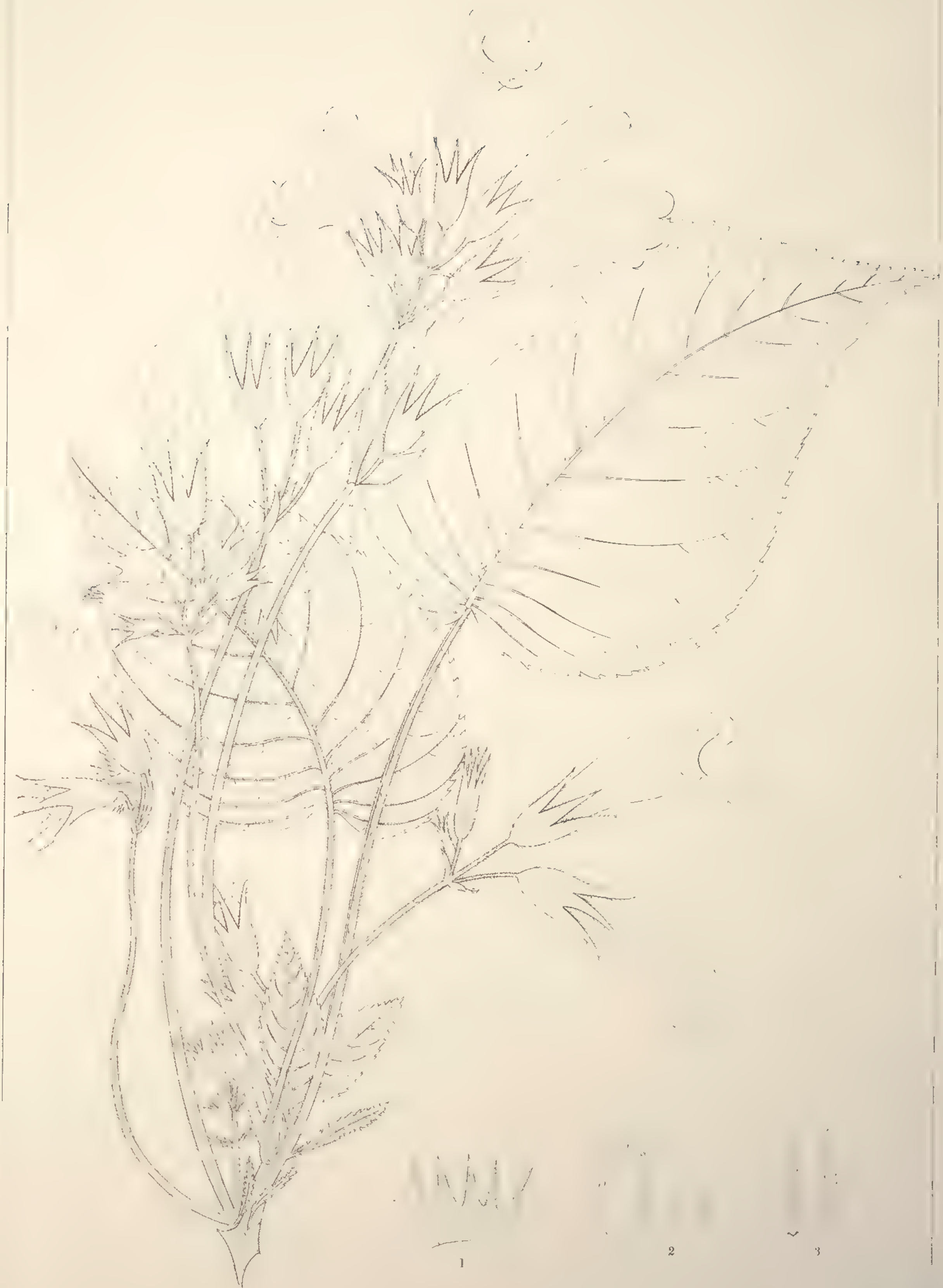
Habitat. In Burma superiore ad Poneshee qua Dr. J. Anderson collegit.

This may be a different species from α. I have now collected specimens in the Khasiya hills which in the size of the leaves and development of the stem fully equal this picture of β: but in these large Khasiya specimens the peduncles are usually 1-2-flowered only, never more than 3-flowered.

EXPLICATIO TABULÆ LXXX.

Planta ex specimine Burmannico a Dr. J. Andersono exsiccato depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.



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Drawn by Gopal Chandra Das,
Botanical Survey, Calcutta

Lith. at the Arbodical Mus., Surv. Gen's Office, Calcutta.

Drawn by Gopal Chandra Das,
Botanic Gardens, Calcutta.

Lithd. by Dinonáth Náth, Survr. Genl's. Office, Calcutta.

TAB. LXXXI.

CHIRITA ACUMINATA.

10. Chirita acuminata R Brown in Horsfield Pl. Jav. p. 117. Incarvillea oblongifolia Roxb. Flor. Ind. III p. 113. Calosacme acuminata Wallich Cat No. 802. Chirita sp. No. 10 Hook. f. et Th. in Herb.

Suffrutex, aliquando 6-8 ped. alt. Folia petiolata oblonga acuta minute serrata utrinque molliter pilosa. Pedunculi axillares bis ter quaterve divisi cum bracteis angustis brunneo-villosi. Calyx villosus ad mediam partem divisus segmentis ovato-lanceolatis. Corolla subviscida pilosa, alba luteo-vel roseo-suffusa tubo inferne haud constricto. Ovarium cum stylo hirsutum. Stigma vix unilaterale bifidum. Capsula 3 uncias longa falcata maturationis tempore glanduloso-pilosa, Semina Chiritæ.

Hab. In collibus Khasiya ad 2000-4000 ped. alt. eorumque radicibus Assam penetrantibus. In collibus Jaintea et Naga, Khasiyæ orientem versus. In convallibus collium supra Chittagong.

Vidi specimina viva spontanea numerosa.

The seeds of this plant are very small and like those of other species of Chirita: and Roxburgh was mistaken in describing the seeds as winged. I have found the plant in flower in January in Roxburgh's locality in the Chittagong hills: and Roxburgh's Incarvillea oblongifolia (as R. Brown discovered) is the present plant beyond all doubt of mine.

Babactes oblongifolia DC IX. 260 is a plant for which there is probably no foundation beyond Decandolle's implicit trust in Roxburgh as to his description of a minute object. Roxburgh has often been supposed mistaken in his descriptions by Wight and Arnott, German authors, and others, in their attempts to compel Roxburgh's descriptions to fit the plants in their hands. Roxburgh is hardly ever in error in describing any object of tangible size, but the magnifying means at his disposal were very imperfect, and where the parts are minute a broad allowance should always be made. Thus Roxburgh's descriptions of the pales in the flowers of the Andropogonidæ are very imperfect.

EXPLICATIO TABULÆ LXXXI.

Planta ex specimine Khasiano exsiccato depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco, a facie et a latere visum.
4. Semen valide auctum.

TAB. LXXXII.

CHIRITA PRIMULACEA.

11. **Chirita primulacea** sp. nov. No 267 Chirita T. Anderson in herb Didymocarpus No. 16 Hook. f. et Th. in Herb.

Acaulis. Folia longe petiolata oblonga aut lanceolata alte irregulariterque duplicato-crenato-serrata, utrinque molliter hirsuta. Pedunculi perplures 1-2-divisi cum bracteis angustis molliter hirsuti. Calyx (extus intusque) molliter hirsutus ad mediam partem vel ultra divisus segmentis oblongo-lanceolatis. Corolla majuscula molliter pilosa, alba leviter luteo-suffusa, tubo prope medium haud contracto. Ovarium cum stylo molliter hirsutum. Capsula 3-4 uncias longa, pilosa.

Hab. In convallibus Himalaya provinciæ Sikkim ad 1500-7000 ped. alt. ad rupes madidas verticales rosulariter adfixa.

Floret Maio, aliis pluribus Didymocarpeis præcocius.

Hæc species ex beato T. Anderson Chirita, ex cl. Hook. f. et Th. Didymocarpus. Stigma inter stigmata typica Chiritæ atque Didymocarpi fere intermedium videtur : flores numerosissimi ad inflorescentiam Didymocarpi spectant at alii characteres (præsertim forma corollæ) Chiratam indicant.

Vidi specimina viva spontanea.

The distinction between Chirita and Didymocarpus is arbitrary. The reason for maintaining the two genera is because 1st., they comprise a large series of species for splitting which into two sections no better characters than those at present assigned to the genera Chirita and Didymocarpus have as yet been found. 2nd, in running two long established large genera together, a serious amount of confusion is apt to arise where a species of each genus has the same specific name.

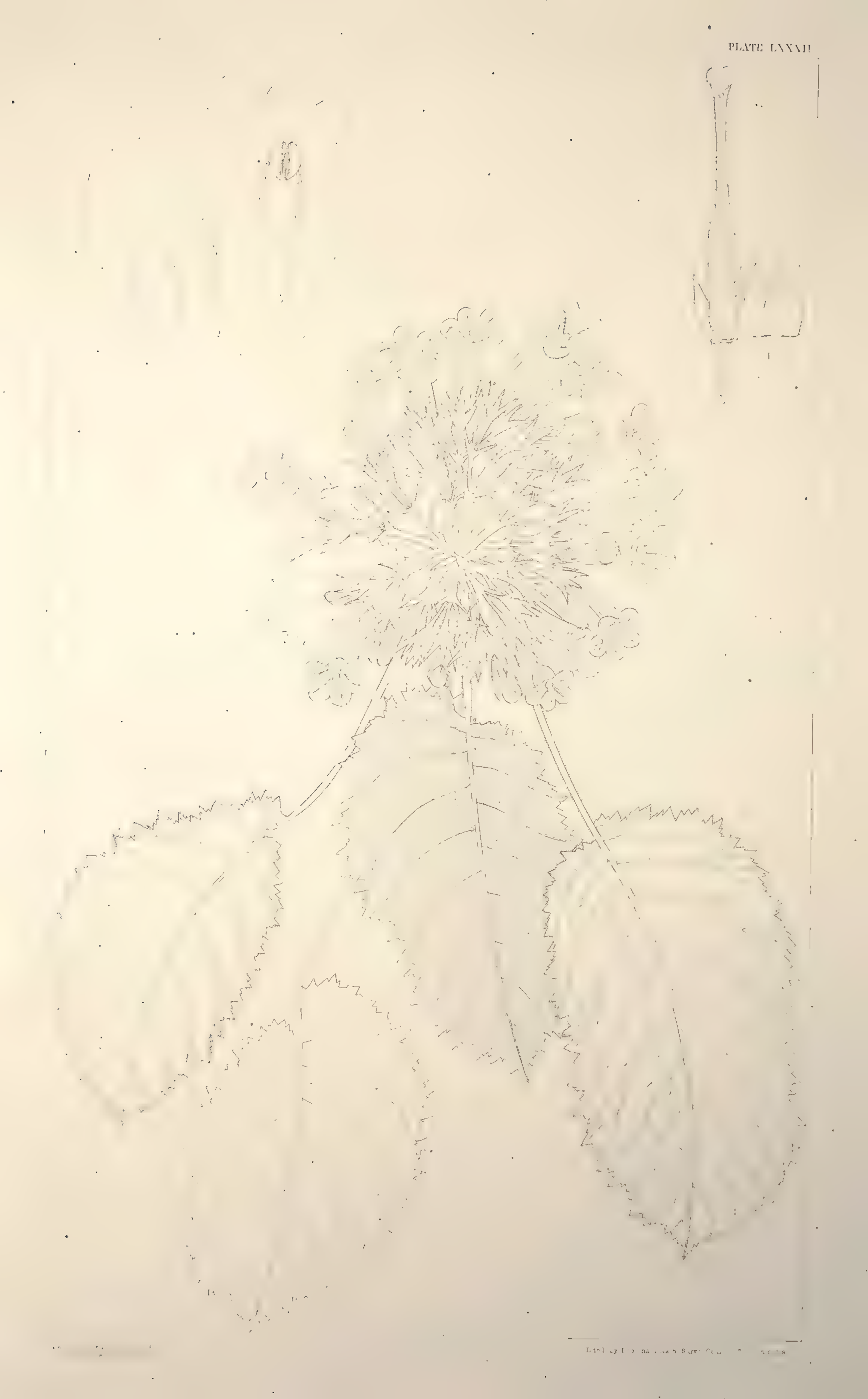
Thus the old Kyllingia umbellata has become Cyperus umbellatus, but there has been a totally different plant known for sixty years as Cyperus umbellatus, and an abominable confusion has thus arisen.

The same argument holds against throwing Paspalum, Digitaria &c. into the already crowded Panicum, but it would of course be quite different if the botanist who pointed out the arbitrariness of the distinctions between Digitaria and Panicum (which we were all tolerably well aware of before) had proposed new sections founded on better defined characters.

EXPLICATIO TABULÆ LXXXII.

Planta ex specimine Sikkimensi recente depicta.

1. Pistillum, corolla discoque pentagono amotis, calyce fisso : a Gopal Chandra depictum.
2. Corolla fissa et explanata a Gopal Chandra depicta.



Lith. by Ives Photo-Litho. Survey Office, Washington D.C.

VII. BÆA DC IX., p. 271.

Stamina 2 fertilia. Stigma vix bilobum. Capsula elongata bivalvis longitudinaliter loculicide dehiscens, valvis demum spiraliter tortis.

Mr. Kurz informs me that there are Javan species which connect Bæa with Didymocarpus, the capsules having the fruiting valves imperfectly twisted.

TAB. LXXXIII.

BÆA FLOCCULOSA.

(1). **Bæa flocculosa nov. sp. Bæa No. 2 Hook. f. et Th. in Herb. Bæa sp Parish Herb No. 436.**

Caulis abbreviatus. Folia alterna approximata, elliptica aut oblonga acuta crenata, juniora corrugata venis quasi fenestratis cinnamoneo-tomentosa, adulta plus minus glabrata. Pedunculi longi flocculoso-tomentosi corymboso-paniculati bracteis parvis ovato-oblongis tomentosis. Pedicelli ultimi bracteis multoties longiores. Calyx parvus villosus ad mediam partem vel ultra 5-fidus, segmentis lanceolatis. Corolla parva, tubo lato. Capsula 3-4 lineas longa.

Hab. In collibus Khasiæ ad 1000-4000 ped. alt.

Distributio Indica. Ad Moulmein in Burma inferiore.

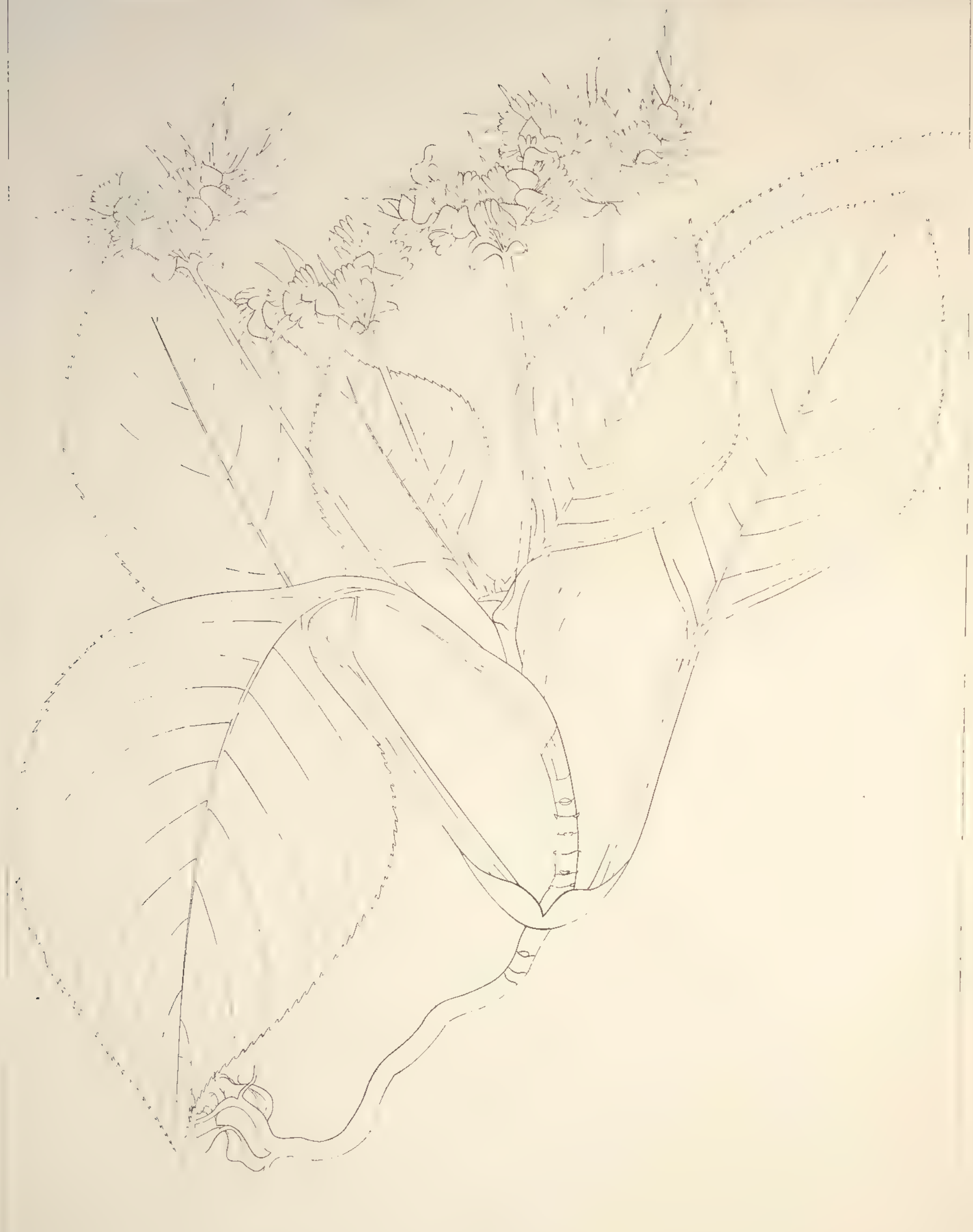
Bæa Minahassæ T. & B. ex insula Celebes vix differt pedicellis bracteisque glabratis.

Vidi specimina viva spontanea.

EXPLICATIO TABULÆ LXXXIII.

Planta ex specimine Khasiano exsiccato depicta.

1. Calyx fissus et explanatus.
2. Stamina.
3. Pistillum cum disco.
4. Semen valde auctum.



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TAB. LXXXIV.

BŒA AMPLEXICAULIS.

2. **Bœa amplexicaulis Parish in litt.**

Glabra caulescens. Folia opposita elliptica acuta vix serrulata, inferiora longe petiolata, supremum jugum petiolis alatis basi connatis amplexicaulibus unitum. Pedunculi elongati bis-ter-divisi, pedicellis bracteas ovatas haud excedentibus. Calyx fere ad basin divisus segmentis oblongo-obovatis. Corolla pro genere magna. Stylus elongatus stigmate parvo.

Hab. Moulmein in Burma inferiore. Prope Prome Burmæ inferioris collegit S. Kurz.

Vidi specimina sicca spontanea.

As to Bœa ? multiflora R. Brown in Horsfield Plant. Jav., p. 120, it has been supposed to be the plant described above as Championia multiflora, but there is no specimen here at Calcutta to shew what it was.

Of Bœa ? Wallichii DC. IX, p. 271, an original specimen in fruit by Wallich is in the Calcutta Herbarium. It is a true Bœa, and distinct from all the others described.

EXPLICATIO TABULÆ LXXXIV.

Planta ex specimine Birmannico a cl. Kurz exsiccato depicta.

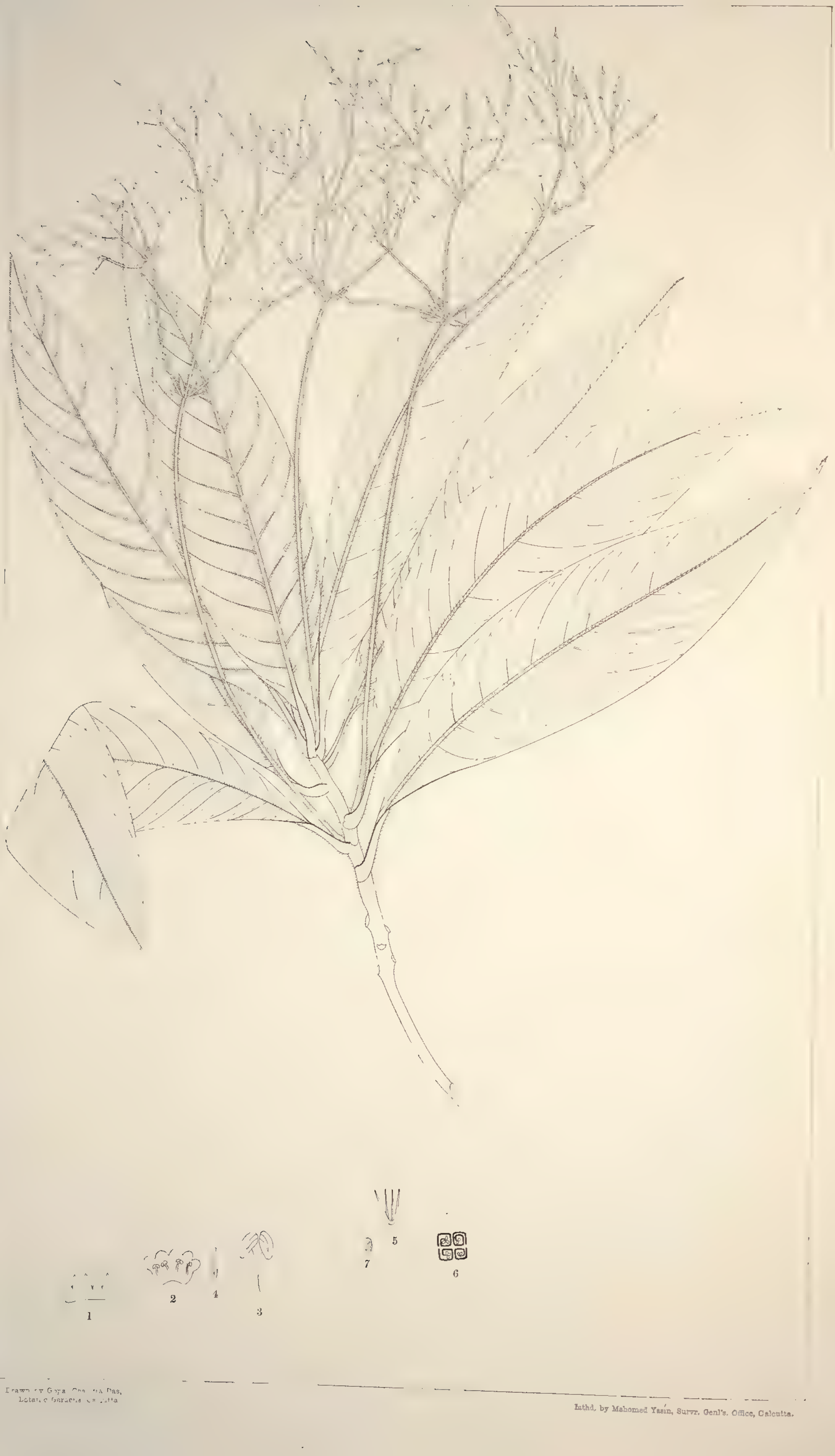
1. Calyx fissus et explanatus.

2. Stamina.

VIII. BŒICA (Nov. genus Bœæ proximum Dr. T. Anderson in Calc. Herb.)

Corolla parva limbo 5-fido vix bilabiato. Stamina 4 fertilia subequalia: antheræ 2. Stigma vix bilobum. Capsula elongata loculicida mox quadrivalvis, valvis rectis. Folia alterna.

Of the three species here described I have the flowers of Bœica fulva only. In all, the leaves are petiolate elongate, towards the top of the suffrutescent short stem but not crowded. The peduncles are axillary long, many times corymbosely divided. The capsules are about 3 lines long. The seeds are minute and exactly like those of Bœa.



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Drawn by Gopal Chandra Das,
Lotan's Gardens, Calcutta

Lithd. by Mahomed Yasin, Survr. Genl's. Office, Calcutta.

TAB. LXXXV.

BŒICA FULVA.

1. Bœica fulva nov. sp.

Caulis ad apicem fulvo-hirsutus. Folia breve petiolata elongato-lanceolata falcata fere integra, fulvo-sericeo-hirsuta demum supra plus minus glabrata. Pedunculi fulvo-villosi. Bracteæ angustæ parvæ longe fulvo-villosæ. Calyx parvus fere ad basin 5-partitus segmentis lanceolatis, vix pilosus.

Hab. In Assam ; collegit Masters.

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ LXXXV.

Planta ex specimine Assamico a Mastersio exsiccato depicta.

1. Calyx fissus et explanatus.
2. Corolla fissa et explanata.
3. Stamen.
4. Pistillum junius.
5. Capsula dehiscens, haud aucta.
6. Capsulæ dehiscentis horizontalis sectio, aucta.
7. Semen valde auctum.

TAB. LXXXVI.

BŒICA GRIFFITHII.

2. **Bœica Griffithii nov. sp.**

Caulis ad apicem adpresse cinnamoneo-tomentosus. Folia breve petiolata lanceolata subfalcata vix crenulata, juniora cinnamonea mox glabrata. Pedunculi villosi. Bracteæ angustæ parvæ breviter villosæ. Calyx parvus fere ad basin 5-partitus segmentis lanceolatis, vix pilosus.

Hab. "In Himalaya orientali" Griffith (verosimiliter in Assam superiore.)

Vidi specimina sicca spontanea.

Very different in general appearance from the preceding species, but I have been unable to lay hold of any distinguishing character except the indumentum, which is here (on the young leaves and tip of the stem) a hard adpressed tomentum.

EXPLICATIO TABULÆ LXXXVI.

Planta ex specimine Griffithiano depicta.

Drawn by G[illegible] from a Botanic Garden specimen.

Lithd by Dwarkanath Nath, Govt. Genl's Office, Calcutta.

Drawn by Gopal Chandra Das,
Botanic Gardens, Calcutta.

Lithd. by Ináyat Husein, Survr. Genl's. Office, Calcutta.

TAB. LXXXVII.

3. Bœica filiformis (=Rhyncotechum filiforme. Benth MS.)

Caulis ad apicem glabratus. Folia petiolata elongato-lanceolata acuminata fere integra glabrata. Pedunculi oglabri ramis divaricatis capillaceis. Bracteæ parvæ angustæ glabræ. Calyx minimus glaber fere ad basin partitus, segmentis oblongis.

Hab.—In collibus Naga dictis Assamiæ superioris. Masters.

In Bengalia orientali (verosimiliter Assâmia superiore) Griffith.

Vidi specimina sicca spontanea.

EXPLICATO TABULÆ LXXXVII.

Planta ex specimine Assamico a Masters exsiccato depicta.

TAB. LXXXVII. *bis.*

Of the plant here depicted, many specimens are preserved in the Calcutta Herbarium, where it has been arranged by Mr. Kurz as an unknown genus of Cyrtandraceæ.

I have collected it myself; but my specimens, like all those in the Calcutta Herbarium, are in fruit only; and, though I cannot guess what it can be if not a Cyrtandrad, I cannot pretend to place it properly in the series: and think it best to give it no name.

The capsule differs from all the Cyrtandraceæ in breaking away, so as to leave the two ribs united at the top, and carrying the persistent style: I therefore still doubt whether it is Cyrtandraceous at all. The texture of the leaves, the want of stipules, and the numerous small seeds, suggest Cyrtandraceæ as the probable order.

Hab. In montosis Bengaliæ orientalis ab Assamia orientali usque ad colles Chittagongiæ, mensibus. Sept. Oct. florens.

EXPLICATIO TABULÆ LXXXVII. *bis.*

Planta a specimine Chittagongensi exsiccato depicta.

1. Capsula paullo ampliata, valvis delapsis.

2. Semen valde ampliatum.

Drawn and lith graphed by Jitaya Chand Samanta

X. RHYNCOGLOSSUM DC IX p. 274.

Caylx 5-fidus per œstivationem valvatus. Corolla tubulosa bilabiata. Stamina 2-fertilia. Capsula ovoidea calyce superata longitudinaliter loculicide dehiscens. Folia alterna.

TAB. LXXXVIII.

RHYNCOGLOSSUM OBLIQUM.

1. Rhyncoglossum obliquum DC. IX. p. 274, cum syn. Loxotis obliqua Miquel Flor. Ind. II. p. 731.

Herba succulenta fere glabra. Folia petiolata ovata basi hinc excisa. Racemi terminales secundiflori subsimplices, pedicellis solitariis 1-bracteatis. Flores deflexi. Calyx subcorolloideus persistens minute pilosus ad tertiam partem vel fere ad basim divisus segmentis lanceolatis. Corolla cærulea. Stigma vix divisum.

Hab. In montibus Himalaya, provinciarum Sikkim et Bhotan ad 1,000-5,000. ped. alt. In collibus Assamiæ. In collibus Khasia et Chittagong ad 0-2,000 ped. alt. In monte Parasnath provinciæ Behar ad 4,000 ped. alt.

Distributio Indica. In Peninsula Indica et in regno Bombay. In Himalaya boreali occidentali et Nepalia. In Burmah et Malaya.

Vidi specimina viva spontanea numerosa.

My Bengal specimens vary from 3 inches to 3 feet high. The largest leaves have the blade nearly 6 inches long by 3 broad, and also very large racemes and flowers. Some specimens are not quite glabrous. I do not see from the description that Rhyncoglossum scabrum Dalzell (vid. Walp. Annal III. p. 98) or Rhyncoglossum Zeylanicum Hook. (vid. Walp. Rep. VI. p. 522) differs.

EXPLICATIO TABULÆ LXXXVIII.

Planta ex tabula 35 Wallich Tentamen Nepalense excripta.

1. Calyx fissus et explanatus.
2. Corolla fissa et explanata, labiis infra apicem cucullatis.
3. Stamina.
4. Pistillum junius cum disco.
5. Ovarii horizontalis sectio.
6. Capsulæ dehiscentis horizontalis sectio.
7. Capsulæ valvula dehiscens ab interiore facie visa.
8. Semen valide auctum.

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Drawn by Gopal Chandra Das
Botanic Gardens, Calcutta.

Lithd by Abdoo. Majid, Survr. Ge... Bot. Gardens

XI. STAURANTHERA. DC IX. p. 278.

Calyx 5-fidus, tubo campanulato, sinubus plicatis quasi 5-alatus. Corolla tubo brevi basi ampla obliqua, limbo subæqualiter 5-fido. Stamina 4 fertilia antheris cordiformibus cruciatim cohærentibus. Capsula globosa chartacea.

TAB. LXXXIX

STAURANTHERA UMBROSA.

1. **Stauranthera umbrosa Kew Herb = Cyananthus umbrosa Griffith in Herb**

Folia quasi-alterna petiolata anguste elliptica aut lanceolata basi angustata secunda, remote crenato-serrata, supra glabrata subtus minute puberulo-pilosa. Pedunculi axillares et quasi-terminales viscido-pubescentes floribus paucis erectis distantibus in racemo-unilaterali pedicellatis. Calyx viscido-pubescens ad dimidiam divisus. Capsula pubescens

Hab. In collibus Mishmee et Naga dictis Assamiæ superioris.

Vidi specimina sicca spontanea.

The corolla is gibbous rather than spurred both in St. umbrosa and in St. grandifolia.

In the dried specimens the leaves of St. umbrosa often appear absolutely alternate, *i. e.*, the smaller leaf of each pair quite obsolete.

The capsule when ripe is thin papery and breaks up by a very irregular horizontal line.

EXPLICATIO TABULÆ LXXXIX.

Planta ex specimine Assamico exsiccato depicta.

1. Corolla intra calycem verticaliter sectum.
2. Stamen.
3. Pistillum junius. (N. B.) Stigma revera capitatum.
4. Semina valde aucta.

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TAB. LXXXIX *bis.*

STAURANTHERA GRANDIFOLIA.

2. Stauranthera grandifolia DC IX. p 278.

Folia opposita alterum minimum stipulæforme alterum elliptico-oblongum falcatum basi hinc excisum inde auriculato-cordatum remote crenatum supra strigosum subtus pilosum aut junius villosum. Pedunculi axillares et quasi-terminales viscido-pubescentes floribus erectis distantibus paniculatis, panicula subsecunda aut aliquando depauperata simplici. Calyx viscide pubescens ad dimidiam partem divisus. Capsula pubescens.

Hab. In collibus Chittagong ad 250 ped. alt.

Distributio Indica. In Penang ex DC IX. p. 278.

Flower and fruiting calyces larger than in Stauranthera umbrosa, and the smaller leaf of each pair definitely developed: in Staur. umbrosa the leaves appear alternate.

EXPLICATIO TABULÆ LXXXIX *bis.*

Planta ex specimine Chittagongensi exsiccato depicta.

1. Semen valde auctum.
2. Capsula dehiscens.

XII. EPITHEMA. DC IX. p. 278.

Calyx 5-fidus tubo cylindrico. Corolla elongata bilabiata. Stamina 2 fertilia. Capsula ovata circumscissa.

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Drawn by Gopal Chandra Das,
Botanic Gardens, Calcutta.

Lithd. by Inayatoolah, Survr. Genl's. Office, Calcutta.

TAB. XC.

EPITHEMA CARNOSUM.

Epithema carnosum DC. IX. p. 279. E. zeylanicum Gardn Wight Icones t 1354.

Folia alterna (aut suprema quasiopposita) petiolata, cordato-rotundata ovata aut elliptica, leviter crenata supra strigosa subtus minute pilosa. Pedunculi elongati pubescentes capitulis terminati Bractea ad capitulum ovata, bracteola ad quemque florem anguste oblonga. Calyx pilosus ad dimidiam partem divisus segmentis lanceolatis. Stigma capitatum. Semina in funiculis elongatis sustentata.

Hab. In montibus Himalaya provinciæ Sikkim ad 1000-4,000 ped. alt.

In collibus Khasia ad 1,000-4,000 ped. alt.

Distributio Indica. In Nepalia. In Malabaria. In Burma.

Vidi specimina viva spontanea numerosa.

Small specimens are almost stemless, with one leaf, the leaf subentire. The capitulum is dense, the whole plant perhaps only 2 or 3 inches high. There is every gradation from this to the largest size, wherein the lower leaves are alternate, the blade of the leaf 6 inches long by 6 broad, the edge of the leaf more or less serrated or excised: the capitulum is elongated into a short scorpioid raceme with larger flowers. Judging merely by the printed descriptions the series of Bengal Epithema carnosum would include E. Saxatile, E. Horsefieldii, E. Brunonis and E. Roxburghii.

[Christisonia subicaulis i. e. Phelipæa? subacaulis Wight Icones t. 1423 is arranged here in the Calcutta Herbarium: it grows in the Khasiya Hills at 2,000-6,000 feet elevation: and either this or a very nearly allied species has been collected by Dr. Thomson in Sikkim.]

EXPLICATIO TABULÆ XC.

Planta ex specimine Sikkimensi recente depicta.

1. Calyx fissus et explanatus.
2. Corolla fissa et explanata.
3. Stamina.
4. Pistillum cum disco.
5. Ovarii junioris horizontalis sectio.
6. Capsula dehiscens.
7. Capsulæ dehiscentis verticalis sectio.
8. Semen in funiculo valde auctum.

XIII. RHYNCOTECHUM DC. IX. p. 285.

Corolla brevis. Stamina 4 fere æqualia. Stigma obtusum. Bacca alba globosa, calyce persistente involucrata. Folia opposita. Corymbi axillares dichotomi.

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TAB. XCI.

RHYNCOTECHUM ELLIPTICUM.

1. **Rhyncotechum ellipticum DC. IX p. 285 in nota. Hook f in Curtis Botanical Magazine Vol. XXVI. t. 5832. Corysanthera Wall. Cat. No. 6411 fide R. Br. in Horsfield Plant Jav. p. 122**

Caulis suffrutescens erectus subsimplex bipedalis superne tomentosa. Folia petiolata ovata, obovata, elliptica, lanceolata vel anguste lineari-lanceolata, crenato-dentata: juniora fulvo-tomentosa, supra demum sæpius glabrata, aliquando sericea lanata aut villosa Bracteæ anguste lanceolatæ cum pedicellis patentim pilosæ. Calyx patentim pilosus puberulus vel glabratus, fere ad basim divisus, segmentis lanceolatis. Bacca piso minor.

Hab. In montibus Himalaya provinciæ Sikkim ad 500-4,000 ped. alt.

In Himalaya orientali atque Assam. In collibus Khasia ad 2,000-4000 ped. alt. In Chittagong.

Species quoad formam atque indumentum foliorum sat variabilis. Pedicelli bracteæ calycesque sæpe corolloidei rosei ideoque fere glabri evadunt: aliquando virides valde pilosi videntur.

Species sæpe cum Rhyncotecho vestito habitans et quanquam variabilis ab illo bene distincta.

Vidi specimina viva spontanea numerosa.

From the description it does not appear how Rh. parviflorum Bl. (Miq. Flor. Ind. II. p. 750) differs.

EXPLICATIO TABULÆ XCI.

Planta ex specimine Sikkimensi recente depicta.

1. Calyx fissus et explanatus.
2. Corolla fissa et explanata.
3. Stamen.
4. Pistillum.
5. Ovarii horizontalis sectio.
6. Semen valde auctum.

TAB. XCII.

RHYNCOTECHUM VESTITUM.

2. Rhyncotechum vestitum Wallich. Rhyncotechum sp. 4. Hook. f. et Th. in Herb.

Caulis suffrutescens erectus subsimplex bipedalis superne scabro-hirsutus. Folia petiolata, ovata elliptica aut lanceolata, remote crenato-dentata aut fere integra, juniora hirsuta, demum utrinque hirto-strigosa. Bracteæ lanceolatæ cum pedicellis hirtæ. Calyx hirsutissimus fere ad basin divisus segmentis lineari-lanceolatis. Bacca piso minor.

Hab. In montibus Himalaya provinciæ Sikkim ad 2,000-5,000 ped. alt. In Bengali orientali (i. e. verosimiliter Assam.) In collibus Khasia ad 0-4,000 ped. alt.

Pedicelli sæpe albi corolloidei. Quam Rhyn. ellipticum præcocius floret.

Vidi specimina viva spontanea numerosa.

EXPLICATIO TABULÆ XCII.

Planta ex specimine Sikkimensi recente depicta: at summi caulis hirsuties omissa est.

1. Calyx fissus et explanatus.
2. Corolla fissa et explanata.
3. Stamen.
4. Pistillum junius.

1 2 3 4

Drawn by Gopal Chandra Das,
Botanic Gardens, Calcutta

Lithd by Dwarkanath Natt, Survr Genls Office, Calcutta.

Drawn by Gopál Chandra Dás,
Botanic Gardens, Calcutta.

Lithd. by Romanath Dás, Survr. Genl's. Office, Calcutta.

TAB. XCIII.

RHYNCOTECHUM LATIFOLIUM.

3. Rhyncotechum latifolium Hk. f. et. Th. in Herb.

Caulis suffrutescens erectus subsimplex. Folia petiolata, elliptica aut lanceolata crenato-dentata, juniora cinnamoneo-tomentosa, demum utrinque glabrata. Corymbi axillares divaricato-paniculati ramosisimi. Bracteæ lanceolatæ cum pedicellis cinnamoneæ tomentosæ aut adpresse sericeæ. Calyx longe adpresse cinnamoneo-sericeus, fere ad basin divisus, segmentis lanceolatis.

Hab. In Assam (Wallich, Masters). In Bengalia orientali, verosimiliter Assam. (Griffith.)

Vidi specimina sicca spontanea.

EXPLICATIO TABULÆ XCIII.

Planta ex specimine Assamico exsiccato depicta.

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